Tennessee Valley Authority, Sequoyah Nuclear Plant, P.O. Box 2000, Soddy Daisy, Tennessee 37384

April 24, 2020

10 CFR 50.4
10 CFR 50.36a
10 CFR 50, Appendix I

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, D. C. 20555-0001

Sequoyah Nuclear Plant, Units 1 and 2
Renewed Facility Operating License Nos. DPR-77 and DPR-79
NRC Docket Nos. 50-327, 50-328, and 72-034

Subject: **Annual Radioactive Effluent Release Report for 2019 Monitoring Period**

Enclosed is the Annual Radioactive Effluent Release Report (ARERR) for the period of January 1 to December 31, 2019. This report (Enclosure 1) is being submitted in accordance with the respective Sequoyah Nuclear Plant (SQN), Units 1 and 2, Technical Specification (TS) 5.6.2 and Certificate of Compliance for Spent Fuel Storage Casks Nos. 1014 and 1032, Chapter 5.

Offsite Dose Calculation Manual (ODCM), Section 5.2 requires that a Radiological Impact Assessment be submitted with the ARERR for the same reporting period. The assessment is included as Enclosure 2. There were no changes to the ODCM during the reporting period.

There are no regulatory commitments contained in this letter. If you have any questions concerning this matter, please contact Mr. Jeffrey Sowa at (423) 843-8129.

Respectfully,

Matthew Rasmussen
Site Vice President
Sequoyah Nuclear Plant

Enclosures:
1. Annual Radioactive Effluent Release Report, Sequoyah Nuclear Plant, January - December 2019
2. Radiological Impact Assessment Report, Sequoyah Nuclear Plant, January - December 2019

ENCLOSURE 1

ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT

SEQUOYAH NUCLEAR PLANT

JANUARY - DECEMBER 2019

2019
SEQUOYAH NUCLEAR PLANT (SQN)
EFFLUENT AND WASTE DISPOSAL ANNUAL REPORT

I. REGULATORY LIMITS

A. Gaseous Effluents

1. Dose rates due to radioactivity released in gaseous effluents from the site to areas at and beyond the unrestricted area boundary shall be limited to the following:

   a. Noble gases: - Less than or equal to 500 mrem/year to the total body.

   - Less than or equal to 3000 mrem/year to the skin.

   b. Iodine-131 (I-131), Iodine-133 (I-133), tritium, and all radionuclides in particulate form with half-lives greater than eight days:

   - Less than or equal to 1500 mrem/year to any organ.

2. Air dose due to noble gases released in gaseous effluents to areas at and beyond the unrestricted area boundary shall be limited to the following:

   a. Less than or equal to 5 mrad for gamma radiation and less than or equal to 10 mrad for beta radiation during any calendar quarter.

   b. Less than or equal to 10 mrad for gamma radiation and less than or equal to 20 mrad for beta radiation during any calendar year.

3. Dose to a member of the public from Iodine-131, Iodine-133, tritium, and radionuclides in particulate form with half-lives greater than eight days in gaseous effluents released to areas at and beyond the unrestricted area boundary shall be limited to the following:

   a. Less than or equal to 7.5 mrem to any organ during any calendar quarter.

   b. Less than or equal to 15 mrem to any organ during any calendar year.

B. Liquid Effluents

1. The annual average concentration of radioactivity released in liquid effluents to unrestricted areas shall be limited to the concentrations specified in Title 10 of the Code of Federal Regulations (CFR), Part 20 (Standards for Protection Against Radiation), Appendix B, Table 2, Column 2, for radionuclides other than dissolved or entrained noble gases. For dissolved or entrained noble gases, the concentration shall be limited to 2.0E-04 microcuries/milliliter (μCi/ml) total activity.

2. The dose or dose commitment to a member of the public from radioactivity in liquid effluents released to unrestricted areas shall be limited to:

   a. Less than or equal to 1.5 mrem to the total body and less than or equal to 5 mrem to any organ during any calendar quarter.

   b. Less than or equal to 3 mrem to the total body and less than or equal to 10 mrem to any organ during any calendar year.

II. EFFLUENT CONCENTRATION LIMITS

A. Liquids

*1. The Effluent Concentration Limits (ECL) for liquids are those listed in 10 CFR 20, Appendix B, Table 2, Column 2. For dissolved and entrained gases, the ECL of 2.0E-04 μCi/ml is applied. This ECL is based on the Xenon-135 (Xe-135) concentration in air (submersion dose) converted to an equivalent concentration in water as discussed in the International Commission on Radiological Protection (ICRP), Publication 2.

*These values are used as applicable limits for liquid and gaseous effluents.

B. Gaseous

*1. The maximum permissible dose rates for gaseous releases are defined in the plant Offsite Dose Calculation Manual (ODCM).

   a. Noble gas dose rate at the unrestricted area boundary:

      - Less than or equal to 500 mrem/year to the total body.
      - Less than or equal to 3000 mrem/year to skin.

   b. Iodine-131, Iodine-133, tritium, and particulates with half-lives greater than eight days dose rate at the unrestricted area boundary:

      - Less than or equal to 1500 mrem/year to any organ.

*These values are used as applicable limits for liquid and gaseous effluents.

III. AVERAGE ENERGY

SQN's ODCM limits the dose equivalent rates due to the release of noble gases to less than or equal to 500 mrem/year to the total body and less than or equal to 3000 mrem/year to the skin. The use of dose rate is in accordance with NUREG-0133, "Preparation of Radiological Effluent Technical Specifications for Nuclear Power Plants." Since the release rate is not used for effluent control, the average energy discussed in Regulatory Guide 1.21 (used for release rate control) is not included in this report.

IV. MEASUREMENTS AND APPROXIMATIONS OF TOTAL RADIOACTIVITY

NOTE: Every effort is made to ensure that effluent releases from SQN are conducted such that the ODCM Lower Limit of Detection (LLD) values are met. Whenever an analysis does not identify a radioisotope, a value of "0.00E-01 or 0.00+E01 Ci" is recorded for the release. This does not necessarily mean that no activity was released for that particular radionuclide, but that the concentration was below the ODCM and analysis LLD. Refer to Tables A and B for estimates of these typical LLD values.

A. Fission and Activation Gases

Airborne effluent gaseous activity is continuously monitored and recorded. Additional grab samples from the shield building, auxiliary building, service building, and condenser vacuum exhausts are taken and analyzed at least monthly to determine the quantity of noble gas activity released for the month based on the average vent flow rates recorded for the sample period. Also, noble gas samples are collected and evaluated for the shield and auxiliary buildings following startup, shutdown, or rated thermal power change exceeding 15 percent within one hour (sampling is only required if the dose equivalent I-131 concentration in the primary coolant or the noble gas activity monitor shows that the containment activity has increased more than a factor of 3).

The quantity of noble gases released through the shield and auxiliary building exhausts due to purging or venting of containment and releases of waste gas decay tanks are also determined.

The total noble gas activity released for the month is then determined by summing of the activity released from each vent for the sampling periods.

B. Iodines and Particulates

Iodine and particulate activity is continuously sampled. Charcoal and particulate samples are taken from the shield and auxiliary building exhausts and analyzed at least weekly to determine the total activity released from the plant based on the average vent flow rates recorded for the sampling period.

Also, particulate and charcoal samples are taken from the auxiliary and shield building exhausts once per 24 hours for 2 days following startup, shutdown, or a rated thermal power change exceeding 15 percent within 1 hour. The quantity of iodine and particulate released from each vent during each sampling period is then determined using the average vent flow rates recorded for the sampling period and activity concentration.

The total particulate and iodine activity released for the month is then determined by summing all activity released from the shield and auxiliary building exhausts for the sampling periods.

C. Carbon-14 in Gaseous Releases

The Carbon-14 production and effluent source term estimates were based on Electric Power Research Institute methodology provided in EPRI Report 1021106, "Estimation of Carbon-14 in Nuclear Power Plant Gaseous Effluents," December 2010. It was determined that 21.6 curies of Carbon-14 is generated annually at SQN. However, only 98 percent is considered released as gas and only the carbon dioxide form (20 percent) of that is used in the gaseous dose calculations.

D. Liquid Effluents

Batch (Radwaste and during periods of primary to secondary leakage, condensate regenerants to cooling tower blowdown)

Total gamma isotopic activity concentrations are determined on each batch of liquid effluent prior to release. The total activity of a released batch is determined by summing each nuclide's concentration and multiplying by the total volume discharged. The total activity released during a month is then determined by summing the activity content of each batch discharged during the month.

There were no changes made to the radioactive waste systems and/or the Process Control Program (PCP) for this calendar year.

Continuous Releases and Periodic Continuous Releases (Condensate regenerants, turbine building sump, and steam generator blowdown)

Total gamma isotopic activity and tritium concentrations are determined monthly on one composite sample each from the condensate system, and the turbine building sump. The tritium value is applied to releases over the month. Total gamma isotopic activity concentration for Units 1 and 2 steam generator blowdown is determined 3 times a week. In addition to ODCM Table 2.2-1, tritium concentrations are determined 3 times a week, averaged for the month, and applied to releases over the month. The total activity of the continuous release is determined by summing each nuclide's concentration and multiplying by the total volume discharged.

Monitoring Wells

SQN started conducting an investigation of tritium releases to the groundwater in 2003 due to identification of tritium in one of the on-site monitoring wells. This study involved pressure testing of the radwaste discharge line, installation and sampling of groundwater wells, visual inspection under the refueling water storage tanks (RWSTs) and inspection of drain lines. In addition to the one on-site Radiological Environmental Monitoring Program (REMP) groundwater monitoring well, SQN also has 29 non-REMP monitoring wells to support monitoring the onsite groundwater plume and for the presence or increase of radioactivity. SQN updated the number of wells in 2019 to better monitor the onsite groundwater. These wells are sampled periodically for tritium. The tritium concentrations obtained in 2019 from these non-REMP wells are listed below. Initial and follow up analyses for the semi-annual sampling procedure indicated no gamma activity.

Well	Date	Tritium In pCi/L	Date	Tritium In pCi/L
GP-10	04/03/19	< 313	----	----
GP-13	01/10/19	2110	04/03/19	2020
W10	01/09/19	5580	04/30/19	6510
W10	07/24/19	3930	10/30/19	3490
W10	11/26/19	5220	12/19/19	4810
W11	01/10/19	< 147	04/01/19	< 310
W11	07/24/19	< 153	10/30/19	< 228
W12	01/09/19	951	04/01/19	691
W12	07/24/19	682	10/30/19	932
W12	11/26/19	931	12/20/19	743
W13	01/08/19	< 148	04/03/19	< 365
W13	07/23/19	< 194	10/30/19	< 205
W15	01/09/19	197	04/03/19	< 368
W15	07/23/19	275	10/31/19	< 220
W15	11/26/19	< 230	12/20/19	< 213
W16	01/08/19	594	04/03/19	422
W16	07/22/19	672	10/29/19	455
W18	01/08/19	570	04/03/19	445
W18	07/23/19	523	10/30/19	621
W24	01/09/19	170	04/02/19	< 308
W24	07/22/19	335	10/28/19	< 226
W25	04/02/19	< 320	10/28/19	< 223
W26	04/02/19	< 303	12/19/19	< 233
W27	04/03/19	383	10/29/19	541
W28	04/03/19	< 310	10/29/19	< 237

Well	Date	Tritium In pCi/L	Date	Tritium In pCi/L
W29	01/09/19	378	04/03/19	< 365
W30	01/09/19	391	04/01/19	< 315
W32	04/02/19	< 314	----	----
W34	04/02/19	< 314	----	----
W35	04/01/19	< 309	----	----
W36	01/08/19	179	04/03/19	< 344
W36	07/23/19	< 162	10/31/19	232
W37	07/22/19	< 182	10/28/19	< 211
W38	07/24/19	281	10/29/19	< 211
W39	07/23/19	< 176	10/29/19	< 216
W40	07/24/19	< 181	10/29/19	< 222
W41	07/24/19	< 176	10/30/19	< 232
W42	07/24/19	< 181	10/30/19	< 234
W43	07/25/19	< 164	10/31/19	< 229
W44	07/25/19	332	10/30/19	331
W45i	07/23/19	926	10/30/19	528
W45s	07/23/19	1700	10/30/19	360
W46i	07/23/19	363	10/30/19	582
W46s	07/23/19	284	10/30/19	371
W47i	07/24/19	20100	09/30/19	23300
W47i	10/01/19	19000	10/31/19	20900
W47i	11/26/19	25800	12/19/19	22100
W47s	07/24/19	13600	10/01/19	21600
W47s	10/31/19	17400	11/26/19	19400
W47s	12/19/19	18600	----	----
W48	07/24/19	1270	10/30/19	1550
W9	01/08/19	< 147	04/03/19	< 312
W9	07/22/19	< 170	10/29/19	< 227

Doses from I-131 Water Ingestion Pathway

The REMP requirements as specified in Table 3.12-1 from NUREG 1301, "Offsite Dose Calculation Manual Guidance: Standard Radiological Effluent Controls for Pressurized Water Reactors," dated April 1991, requires an I-131 specific analysis for drinking water pathway samples if the annual dose from I-131 is greater than 1 mrem. In order to evaluate the need for implementation of this additional analysis, the drinking water pathway dose from I-131 to the maximum organ and age group was calculated. The results being reported confirm that the drinking water pathway dose from I-131 was less than the 1 mrem limit and that the performance of the I-131 specific analysis is not required for SQN REMP drinking water samples.

Quarter	1	2	3	4	Totals
I-131 Ci	0.00E+01	0.00E+01	0.00E+01	0.00E+01	0.00E+01
Infant/Thyroid (mrem)	0.00E+01	0.00E+01	0.00E+01	0.00E+01	0.00E+01
Population/Thyroid (mrem)	0.00E+01	0.00E+01	0.00E+01	0.00E+01	0.00E+01

V. BATCH RELEASES

1. Liquid (Radwaste only)	1st Quarter	2nd Quarter	Units
a. Number of releases	20	25	Each
b. Total time period of releases	3260	3980	Minutes
c. Maximum time period of release	189	241	Minutes
d. Average time period of releases	163	159	Minutes
e. Minimum time period of release	129	120	Minutes
f. Average dilution stream flow during release periods	107186	37902	CFS

Liquid (Radwaste only)	3rd Quarter	4th Quarter	Units
a. Number of releases	45	55	Each
b. Total time period of releases	7430	8720	Minutes
c. Maximum time period of release	215	208	Minutes
d. Average time period of releases	165	158	Minutes
e. Minimum time period of release	120	101	Minutes
f. Average dilution stream flow during release periods	27444	41216	CFS

2. Gaseous (Batches only - containment purges, and waste gas decay tanks)	1st Quarter	2nd Quarter	Units
a. Number of releases	30	29	Each
b. Total time period of releases	21000	21100	Minutes
c. Maximum time period of release	1040	1020	Minutes
d. Average time period of releases	699	726	Minutes
e. Minimum time period of release	10	41	Minutes

Gaseous (Batches only - containment purges, and waste gas decay tanks)	3rd Quarter	4th Quarter	Units
a. Number of releases	29	30	Each
b. Total time period of releases	20200	64300	Minutes
c. Maximum time period of release	1010	23600	Minutes
d. Average time period of releases	696	2140	Minutes
e. Minimum time period of release	40	100	Minutes

VI. ABNORMAL RELEASES

1. Liquid	1st Half	2nd Half	Units
a. Number of releases	0	0	
b. Total activity released	0.00E+01	0.00E+01	Ci

2. Gaseous	1st Half	2nd Half	Units
a. Number of releases	0	0	
b. Total activity released	0.00E+01	0.00E+01	Ci

Release Type: Gaseous (Steam)
Release Point: Unit 1 PORVs 1, 2, 3, & 4
Date(s) of Release: 10/12/19 13:29 - 11/3/2019 22:58

This evaluation is for the release to the environment that occurred from Unit 1 PORVs 1, 2, 3 and 4 during the U1R23 refueling outage. Following the reactor trip, the Steam Generator PORVs were open for periods of time during the outage. The following is data used to determine the curies and dose impacts as a result of the release:

- The evaluation assumed the release was continuous from PORVs 1, 2, 3, and 4.
- There have been no gamma emitting radionuclides identified in any Secondary Coolant samples during the previous cycle.

The volume of the steam generator was taken from Westinghouse Guidelines for Secondary Water Chemistry. The listed normal water level value of 3516 ft^3 was used as a conservative value. This calculation assumes that the total volume of the generators was released and that all the tritium present in that initial volume was released. The calculation for the total tritium activity released is as follows:

3516 ft^3/generator * 2.832E+04 ml/ft^3 * 4 generators = 3.983E+08 ml

2.19E-06 µCi/ml * 3.983E+08 ml = 8.73E+02 µCi of H3 or 8.73E-04 Ci of H3

The activity of 8.73E-04 curies was added to the 4th Quarter Table "Curies Released in Gaseous Ground Level Releases," and the 4th Quarter doses in Enclosure 2: Table 4 "Doses from Airborne Effluents."

Individual Doses

Pathway External	Dose	Quarterly Limit	Percent of Limit	Location Sector/Distance/Unit
Gamma Air	0.00E+01 mrad	5 mrad	<1	N/A
Beta Air	0.00E+01 mrad	10 mrad	<1	N/A
Submersion				
Total Body	0.00E+01 mrad	10 mrad	<1	N/A
Skin	0.00E+01 mrad	10 mrad	<1	N/A
Organ Dose				
Child/Thyroid	3.40E-07 mrem	7.5 mrem	<1	WSW/1152/meters
Child/Total Body	3.40E-07 mrem	7.5 mrem	<1	WSW/1152/meters

Population Doses

Total Body Dose	4.63E-06 man-rem
Maximum Organ Dose (organ)	4.63E-06 man-rem (Thyroid, Liver, Bone, GIT, Lung, Kidney)

Release Type: Gaseous (Steam)
Release Point: Unit 1 PORVs 1, 2, 3, & 4
Date(s) of Release: 11/24/19 20:04 - 11/24/2019 21:00

This evaluation is for the release to the environment that occurred from Unit 1 PORVs 1, 2, 3 and 4 during the U1R23 refueling outage. Following the reactor trip, the Steam Generator PORVs were open for periods of time during the outage. The following is data used to determine the curies and dose impacts as a result of the release:

- The evaluation assumed the release was continuous from PORVs 1, 2, 3, and 4.
- There have been no gamma emitting radionuclides identified in any Secondary Coolant samples during the previous cycle.

The volume of the steam generator was taken from Westinghouse Guidelines for Secondary Water Chemistry. The listed normal water level value of 3516 ft^3 was used as a conservative value. This calculation assumes that the total volume of the generators was released and that all the tritium present in that initial volume was released. The calculation for the total tritium activity released is as follows:

3516 ft^3/generator * 2.832E+04 ml/ft^3 * 4 generators = 3.983E+08 ml

1.30E-06 µCi/ml * 3.983E+08 ml = 5.18E+02 µCi of H3 or 5.18E-04 Ci of H3

The activity of 5.18E-04 was added to the 4th Quarter Table "Curies Released in Gaseous Ground Level Releases," and the 4th Quarter doses in Enclosure 2: Table 4 "Doses from Airborne Effluents."

Individual Doses

Pathway External	Dose	Quarterly Limit	Percent of Limit	Location Sector/Distance/Unit
Gamma Air	0.00E+01 mrad	5 mrad	<1	N/A
Beta Air	0.00E+01 mrad	10 mrad	<1	N/A
Submersion				
Total Body	0.00E+01 mrad	10 mrad	<1	N/A
Skin	0.00E+01 mrad	10 mrad	<1	N/A
Organ Dose				
Child/Thyroid	2.02E-07 mrem	7.5 mrem	<1	WSW/1152/meters
Child/Total Body	2.02E-07 mrem	7.5 mrem	<1	WSW/1152/meters

Population Doses

Total Body Dose 2.75E-06 man-rem
Maximum Organ Dose (organ) 2.75E-06 man-rem (Thyroid, Liver, Bone, GIT, Lung, Kidney)

Release Type: Gaseous (Steam)

Release Point: Unit 2 PORVs 1, 2, 3, & 4
Date(s) of Release: 12/12/19 04:49 - 12/12/2019 04:53

This evaluation is for the release to the environment that occurred from Unit 1 PORVs 1, 2, 3 and 4 during the Unit 2 Forced Outage in December 2019. Following the reactor trip, the Steam Generator PORVs were open for a short period of time. The following is data used to determine the curies and dose impacts as a result of the release:

- The evaluation assumed the release was continuous from PORVs 1, 2, 3, and 4.
- There have been no gamma emitting radionuclides identified in any Secondary Coolant samples during the previous cycle.

The volume of the steam generator was taken from Westinghouse Guidelines for Secondary Water Chemistry. The listed normal water level value of 3516 ft^3 was used as a conservative value. This calculation assumes that the total volume of the generators was released and that all the tritium present in that initial volume was released. The calculation for the total tritium activity released is as follows:

3516 ft^3/generator * 2.832E+04 ml/ft^3 * 4 generators = 3.983E+08 ml

8.53E-07 µCi/ml * 3.983E+08 ml = 3.40E+02 µCi of H3 or 3.40E-04 Ci of H3

The activity of 3.40E-04 curies was added to the 4th Quarter Table "Curies Released in Gaseous Ground Level Releases," and the 4th Quarter doses in Enclosure 2: Table 4 "Doses from Airborne Effluents."

Individual Doses

Pathway External	Dose	Quarterly Limit	Percent of Limit	Location Sector/Distance/Unit
Gamma Air	0.00E+01 mrad	5 mrad	<1	N/A
Beta Air	0.00E+01 mrad	10 mrad	<1	N/A
Submersion				
Total Body	0.00E+01 mrad	10 mrad	<1	N/A
Skin	0.00E+01 mrad	10 mrad	<1	N/A
Organ Dose				
Child/Thyroid	1.32E-07 mrem	7.5 mrem	<1	WSW/1152/meters
Child/Total Body	1.32E-07 mrem	7.5 mrem	<1	WSW/1152/meters

Population Doses

Total Body Dose	1.80E-06 man-rem
Maximum Organ Dose (organ)	1.80E-06 man-rem (Thyroid, Liver, Bone, GIT, Lung, Kidney)

Liquid Effluents-Summation of Releases
During the Period
Starting: 1-Jan-2019 Ending: 30-Jun-2019

Type Of Effluent	Units	Quarter 1	Quarter 2	Est. Total Error %
A. Fission & Activation Products				
1. Total Release (Not Including Tritium, Gases, Alpha)	Ci	4.50E-03	1.98E-02	18%
2. Average Diluted Concentration During Period	µCi/ml	2.26E-09	9.35E-09	
3. Percent Of Applicable Limit	%	*	*	
B. Tritium				
1. Total Release	Ci	3.62E+01	3.47E+02	18%
2. Average Diluted Concentration During Period	µCi/ml	1.82E-05	1.64E-04	
3. Percent Of Applicable Limit	%	*	*	
C. Dissolved And Entrained Gases				
1. Total Release	Ci	0.00E+01	5.59E-05	39%
2. Average Diluted Concentration During Period	µCi/ml	0.00E+01	2.64E-11	
3. Percent Of Applicable Limit	%	0.00E+01	1.32E-05	
D. Gross Alpha Radioactivity				
1. Total Release	Curies	0.00E+01	0.00E+01	N/A***
E. Total Waste Volume Released (Pre-Dilution)	Liters	7.02E+07	7.11E+07	4%
F. Volume Of Dilution Water Used	Liters	1.99E+09	2.12E+09	4%
G. Radwaste Volume Released	Liters	1.131E+06	1.356E+06	N/A

* Applicable Limits are expressed in terms of dose. See Tables 5-8 of the 2019 Radiological Impact Assessment Report.
** Zeroes indicate that no radioactivity was present at detectable levels.
*** N/A - Errors in measurement are not reported for these values since none were identified during the reporting period.

Liquid Effluents-Summation of Releases
During the Period
Starting: 1-Jul-2019 Ending: 31-Dec-2019

Type Of Effluent	Units	Quarter 3	Quarter 4	Est. Total Error %
A. Fission & Activation Products				
1. Total Release (Not Including Tritium, Gases, Alpha)	Ci	6.50E-03	1.19E-02	18%
2. Average Diluted Concentration During Period	µCi/ml	2.51E-09	4.26E-09	
3. Percent Of Applicable Limit	%	*	*	
B. Tritium				
1. Total Release	Ci	9.43E+02	4.91E+02	18%
2. Average Diluted Concentration During Period	µCi/ml	3.63E-04	1.77E-04	
3. Percent Of Applicable Limit	%	*	*	
C. Dissolved And Entrained Gases				
1. Total Release	Ci	4.34E-03	1.09E-03	39%
2. Average Diluted Concentration During Period	µCi/ml	1.67E-09	3.91E-10	
3. Percent Of Applicable Limit	%	8.35E-04	1.96E-04	
D. Gross Alpha Radioactivity				
1. Total Release	Curies	0.00E+01**	0.00E+01	N/A***
E. Total Waste Volume Released (Pre-Dilution)	Liters	9.53E+07	9.22E+07	4%
F. Volume Of Dilution Water Used	Liters	2.60E+09	2.78E+09	4%
G. Radwaste Volume Released	Liters	2.530E+06	2.989E+06	N/A

* Applicable Limits are expressed in terms of dose. See Tables 5-8 of the 2019 Radiological Impact Assessment Report.

** Zeroes indicate that no radioactivity was present at detectable levels.

*** N/A - Errors in measurement are not reported for these values since none were identified during the reporting period.

Curies Released in Liquid Effluents
During the Period
Starting: 1-Jan-2019 Ending 31-Mar-2019

	Continuous	Batch	Total
Tritium	1.08E-01	3.61E+01	3.61E+01
FISSION & ACTIVATION PRODUCTS			
Chromium-51	0.00E+00	1.85E-05	1.85E-05
Cobalt-58	0.00E+00	1.80E-03	1.80E-03
Cobalt-60	0.00E+00	9.05E-04	9.05E-04
Nickel-63	0.00E+00	8.79E-04	8.79E-04
Antimony-124	0.00E+00	1.90E-04	1.90E-04
Antimony-125	0.00E+00	7.07E-04	7.07E-04
TOTALS	0.00E+01	4.50E-03	4.50E-03
DISSOLVED AND ENTRAINED GASES			
TOTALS	0.00E+01	0.00E+01	0.00E+01

*Zeroes indicate that no activity was present at detectable levels.

Curies Released in Liquid Effluents
During the Period
Starting: 1-Apr-2019 Ending 30-Jun-2019

	Continuous	Batch	Total
Tritium	1.18E-01	3.47E+02	3.47E+02
FISSION & ACTIVATION PRODUCTS			
Manganese-54	0.00E+01	5.83E-05	5.83E-05
Cobalt-58	0.00E+01	1.30E-03	1.30E-03
Cobalt-60	0.00E+01	2.71E-03	2.71E-03
Nickel-63	0.00E+01	1.57E-02	1.57E-02
Zinc- 65	0.00E+01	1.08E-05	1.08E-05
Niobium-95	0.00E+01	3.11E-05	3.11E-05
Niobium-97	0.00E+01	3.70E-06	3.70E-06
Antimony-124	0.00E+01	5.43E-06	5.43E-06
Antimony-125	0.00E+01	1.44E-05	1.44E-05
TOTALS	0.00E+01	1.98E-02	1.98E-02
DISSOLVED AND ENTRAINED GASES			
Xenon-133	0.00E+01	5.59E-05	5.59E-05
TOTALS	0.00E+01	5.59E-05	5.59E-05

*Zeroes indicate that no activity was present at detectable levels.

Curies Released in Liquid Effluents
During the Period
Starting: 1-Jul-2019 Ending 30-Sep-2019

	Continuous	Batch	Total
Tritium	1.78E-01	9.43E+02	9.43E+02
FISSION & ACTIVATION PRODUCTS			
Chromium-51	0.00E+01	7.44E-05	7.44E-05
Manganese-54	0.00E+01	4.89E-05	4.89E-05
Cobalt-58	0.00E+01	6.10E-04	6.10E-04
Cobalt-60	0.00E+01	2.66E-03	2.66E-03
Nickel-63	0.00E+01	2.77E-03	2.77E-03
Niobium-95	0.00E+01	6.88E-05	6.88E-05
Niobium-97	0.00E+01	4.67E-05	4.67E-05
Tin-125	0.00E+01	2.15E-05	2.15E-05
Antimony-125	0.00E+01	2.02E-04	2.02E-04
TOTALS	0.00E+01	6.50E-03	6.50E-03
DISSOLVED AND ENTRAINED GASES			
Argon-41	0.00E+01	3.34E-05	3.34E-05
Xe-133m	0.00E+01	1.73E-05	1.73E-05
Xenon-133	0.00E+01	4.01E-03	4.01E-03
Xenon-135	0.00E+01	2.74E-04	2.74E-04
TOTALS	0.00E+01	4.34E-03	4.34E-03

*Zeroes indicate that no activity was present at detectable levels.

Curies Released in Liquid Effluents
During the Period
Starting: 1-Oct-2019 Ending 31-Dec-2019

	Continuous	Batch	Total
Tritium	1.48E-01	4.91E+02	4.91E+02
FISSION & ACTIVATION PRODUCTS			
Chromium-51	0.00E+01	3.56E-03	3.56E-03
Manganese-54	0.00E+01	3.49E-05	3.49E-05
Cobalt-58	0.00E+01	1.75E-03	1.75E-03
Cobalt-60	0.00E+01	2.71E-03	2.71E-03
Nickel-63	0.00E+01	2.07E-03	2.07E-03
Zirconium-95	0.00E+01	9.91E-05	9.91E-05
Niobium-95	0.00E+01	1.77E-04	1.77E-04
Niobium-97	0.00E+01	4.75E-05	4.75E-05
Silver-110m	0.00E+01	3.16E-04	3.16E-04
Tin-117m	0.00E+01	8.13E-06	8.13E-06
Antimony 122	0.00E+01	1.46E-05	1.46E-05
Antimony-124	0.00E+01	4.48E-04	4.48E-04
Antimony-125	0.00E+01	5.89E-04	5.89E-04
TOTALS	0.00E+01	1.18E-02	1.18E-02
DISSOLVED AND ENTRAINED GASES			
Xenon-133	0.00E+01	9.64E-04	9.64E-04
Xenon-135	0.00E+01	1.24E-04	1.24E-04
TOTALS	0.00E+01	1.09E-03	1.09E-03

*Zeroes indicate that no activity was present at detectable levels.

TABLE A
LIQUID "TYPICAL LLD" EVALUATION[1]

		Δt[2]		
Nuclide	ODCM LLD	1 hr	8 hr	32 hr
Manganese-54	5.0E-07	3.36E-08	3.36E-08	3.37E-08
Cobalt-58	5.0E-07	2.53E-08	2.54E-08	2.56E-08
Iron-59	5.0E-07	5.26E-08	5.29E-08	5.37E-08
Cobalt-60	5.0E-07	4.63E-08	4.63E-08	4.64E-08
Zinc-65	5.0E-07	2.95E-08	2.95E-08	2.96E-08
Molybdenum-99	5.0E-07	1.55E-07	1.67E-07	2.15E-07
Cesium-134	5.0E-07	1.91E-08	1.91E-08	1.92E-08
Cesium-137	5.0E-07	3.87E-08	3.87E-08	3.87E-08
Cerium-141	5.0E-07	2.80E-08	2.81E-08	2.87E-08
Cerium-144	5.0E-06	1.11E-07	1.12E-07	1.12E-07
Iodine-131	1.0E-06	2.28E-08	2.34E-08	2.55E-08
Krypton-87	1.0E-05	1.16E-07	5.25E-07	(3)
Krypton-88	1.0E-05	9.95E-08	5.49E-07	(3)
Xenon-133	1.0E-05	4.19E-08	4.36E-08	4.98E-08
Xenon-133m	1.0E-05	1.42E-07	1.55E-07	2.13E-07
Xenon-135	1.0E-05	2.06E-08	3.50E-08	2.17E-07
Xenon-138	1.0E-05	8.37E-06	(3)	(3)

Nuclide	ODCM LLD	Typical LLD
Tritium	1.0E-05	1.2E-06
Gross Alpha	1.0E-07	2.0E-08
Strontium-89/90	5.0E-08	3.8E-08/1.4E-08
Iron-55	1.0E-06	1.3E-08

Notes: (1) LLD values are in μCi/ml.
(2) Δt is the time between sample collection and counting time.
(3) T ½ too short.

Gaseous Effluents - Summation of Releases
During the Period
Starting: 1-Jan-2019 Ending: 30-Jun-2019

Type of Effluent	Units	Quarter 1	Quarter 2	Estimated Total Error %
A. Fission and Activation Products				
1. Total Release	Ci	2.51E-01	1.76E-01	11%
2. Average Release Rate For Period	µCi/sec	3.23E-02	2.23E-02	
3. Percent of Applicable Limit	%	*	*	
B. Radioiodines				
1. Total Iodine-131	Ci	0.00E+01	0.00E+01	N/A***
2. Average Release Rate For Period	µCi/sec	0.00E+01	0.00E+01	
3. Percent of Applicable Limit	%	*	*	
C. Particulates				
1. Particulates (Half-Lives > 8 Days)	Ci	0.00E+01	0.00E+01	N/A
2. Average Release Rate For Period	µCi/sec	0.00E+01	0.00E+01	
3. Percent of Applicable Limit	%	*	*	
4. Gross Alpha Radioactiviy	Ci	0.00E+01	0.00E+01	
D. Tritium				
1. Total Release	Ci	5.00E-01	6.48E-01	15%
2. Average Release Rate For Period	µCi/sec	6.43E-02	8.24E-02	
3. Percent of Applicable Limit	%	*	*	
E. Carbon-14				
1. Total Release	Ci	5.63E+00	6.27E+00	N/A
2. Average Release Rate For Period	µCi/sec	7.25E-01	7.97E-01	
3. Percent of Applicable Limit	%	*	*	

* Applicable Limits are expressed in terms of dose. See Tables 1-4 of the 2019 Radiological Impact Assessment Report.

** Zeroes indicate that no radioactivity was present at detectable levels.

*** N/A - Errors in measurement are not reported for these values since none were identified during the reporting period.

Gaseous Effluents - Summation of Releases
During the Period
Starting: 1-Jul-2019 Ending: 31-Dec-2019

Type of Effluent	Units	Quarter 3	Quarter 4	Estimated Total Error %
A. Fission and Activation Products				
1. Total Release	Ci	2.84E-01	4.50E+00	11%
2. Average Release Rate For Period	µCi/sec	3.57E-02	5.66E-01	
3. Percent of Applicable Limit	%	*	*	
B. Radioiodines				
1. Total Iodine-131	Ci	0.00E+01	0.00E+01	N/A***
2. Average Release Rate For Period	µCi/sec	0.00E+01	0.00E+01	
3. Percent of Applicable Limit	%	*	*	
C. Particulates				
1. Particulates (Half-Lives > 8 Days)	Ci	0.00E+01	0.00E+01	16%
2. Average Release Rate For Period	µCi/sec	0.00E+01	0.00E+01	
3. Percent of Applicable Limit	%	*	*	
4. Gross Alpha Radioactiviy	Ci	0.00E+01	0.00E+01	
D. Tritium				
1. Total Release	Ci	1.33E+00	8.47E+00	15%
2. Average Release Rate For Period	µCi/sec	1.67E-01	1.07E+00	
3. Percent of Applicable Limit	%	*	*	
E. Carbon-14				
1. Total Release	Ci	5.55E+00	4.14E+00	N/A
2. Average Release Rate For Period	µCi/sec	6.98E-01	5.21E-01	
3. Percent of Applicable Limit	%	*	*	

* Applicable Limits are expressed in terms of dose. See Tables 1-4 of the 2019 Radiological Impact Assessment Report.

** Zeroes indicate that no radioactivity was present at detectable levels.

*** N/A - Errors in measurement are not reported for these values since none were identified during the reporting period.

Curies Released Gaseous Ground Level Releases
During the Period
Starting: 1-Jan-2019 Ending: 31-Mar-2019

	CONTINUOUS	BATCH	TOTAL
FISSION GASES			
Argon-41	0.00E+01	1.45E-01	1.45E-01
Xenon-133	0.00E+01	9.99E-02	9.99E-02
Xenon-135m	0.00E+01	2.74E-04	2.74E-04
Xenon-135	0.00E+01	6.41E-03	6.41E-03
TOTALS	0.00E+01	2.51E-01	2.51E-01
IODINES			
TOTALS	0.00E+01	0.00E+01	0.00E+01
PARTICULATES			
TOTALS	0.00E+01	0.00E+01	0.00E+01
TRITIUM			
Tritium	3.69E-01	1.30E-01	4.99E-01
CARBON-14			
Carbon-14 (CO_2 form)	1.13E+00	0.00E+01	1.13E+00
Carbon-14 (Total)	5.63E+00	0.00E+01	5.63E+00

*Zeros indicate that no radioactivity was present at detectable levels.

Curies Released Gaseous Ground Level Releases
During the Period
Starting: 1-Apr-2019 Ending: 30-Jun-2019

	CONTINUOUS	BATCH	TOTAL
FISSION GASES			
Argon-41	0.00E+01	1.39E-01	1.39E-01
Xenon-133	0.00E+01	3.52E-02	3.52E-02
Xenon-135	0.00E+01	1.27E-03	1.27E-03
TOTALS	0.00E+01	1.76E-01	1.76E-01
IODINES			
TOTALS	0.00E+01	0.00E+01	0.00E+01
PARTICULATES			
TOTALS	0.00E+01	0.00E+01	0.00E+01
TRITIUM			
Tritium	5.22E-01	1.26E-01	6.48E-01
CARBON-14			
Carbon-14 (CO_2 form)	1.25E+00	0.00E+01	1.25E+00
Carbon-14 (Total)	6.27E+00	0.00E+01	6.27E+00

*Zeros indicate that no radioactivity was present at detectable levels.

Curies Released Gaseous Ground Level Releases
During the Period
Starting: 1-July-2019 Ending: 30-Sep-2019

	CONTINUOUS	BATCH	TOTAL
FISSION GASES			
Argon-41	0.00E+01	2.65E-01	2.65E-01
Xenon-133	0.00E+01	1.85E-02	1.85E-02
Xenon-135	0.00E+01	2.71E-04	2.71E-04
TOTALS	0.00E+01	2.84E-01	2.84E-01
IODINES			
TOTALS	0.00E+01	0.00E+01	0.00E+01
PARTICULATES			
TOTALS	0.00E+01	0.00E+01	0.00E+01
TRITIUM			
Tritium	1.09E+00	2.38E-01	1.33E+00
CARBON-14			
Carbon-14 (CO_2 form)	1.11E+00	0.00E+01	1.11E+00
Carbon-14 (Total)	5.55E+00	0.00E+01	5.55E+00

*Zeros indicate that no radioactivity was present at detectable levels.

Curies Released Gaseous Ground Level Releases
During the Period
Starting: 1-Oct-2019 Ending: 31-Dec-2019

	CONTINUOUS	BATCH	TOTAL
FISSION GASES			
Argon-41	0.00E+01	4.44E+00	4.44E+00
Xenon-133	0.00E+01	5.53E-02	5.53E-02
Xenon-135	0.00E+01	5.52E-04	5.52E-04
TOTALS	0.00E+01	4.50E+00	4.50E+00
IODINES			
TOTALS	0.00E+01	0.00E+01	0.00E+01
PARTICULATES			
TOTALS	0.00E+01	0.00E+01	0.00E+01
TRITIUM			
Tritium	2.10E+00	6.37E+00	8.47E+00
CARBON-14			
Carbon-14 (CO_2 form)	8.28E-01	0.00E+01	8.28E-01
Carbon-14 (Total)	4.14E+00	0.00E+01	4.14E+00

*Zeros indicate that no radioactivity was present at detectable levels.

TABLE B
GASEOUS "TYPICAL" LLD EVALUATION[1]

Noble Gas		Δt[2]		
Nuclide	ODCM LLD	1 hr	1.5 hr	
Krypton-87	1.0E-04	2.08E-06	2.73E-06	
Krypton-88	1.0E-04	1.61E-06	1.81E-06	
Xenon-133	1.0E-04	6.61E-07	6.63E-07	
Xenon-133m	1.0E-04	2.34E-06	2.35E-06	
Xenon-135	1.0E-04	3.43E-07	3.56E-07	
Xenon-138	1.0E-04	1.40E-04	6.10E-04	
Particulate Sample[3]		1 hr[4]	24 hr[4]	7.0 day[4]
Manganese-54	1.0E-11	7.47E-12	3.12E-13	4.48E-14
Cobalt-58	1.0E-11	5.62E-12	2.35E-13	3.46E-14
Iron-59	1.0E-11	1.20E-11	5.02E-13	7.49E-14
Cobalt-60	1.0E-11	1.07E-11	4.46E-13	6.38E-14
Zinc-65	1.0E-11	6.71E-12	2.80E-13	4.03E-14
Molybdenum-99	1.0E-11	3.43E-11	1.61E-12	4.70E-13
Cesium-134	1.0E-11	4.25E-12	1.77E-13	2.54E-14
Cesium-137	1.0E-11	8.48E-12	3.54E-13	5.05E-14
Cerium-141	1.0E-11	5.10E-12	2.15E-13	3.26E-14
Cerium-144	1.0E-11	2.01E-11	8.33E-13	1.20E-13
Iodine-131	1.0E-11	4.76E-12	2.07E-13	3.77E-14
Charcoal Sample				
Iodine-131	1.0E-12	7.25E-12	3.15E-13	5.74E-14

Notes:
(1) LLD values are in μCi/ml.
(2) Δt is the time between sample collection and counting time.
(3) LLD based on sample time + 30 min. sample to analysis.
(4) LLD may be increased by a factor of 10 when samples collected for 2264hours are analyzed.

TABLE B
GASEOUS "TYPICAL" LLD EVALUATION[(1)]
(continued)

Nuclide	ODCM LLD	Typical LLD
Tritium	1.0E-06	1.0E-11
Gross Alpha	1.0E-11	1.5E-14
Strontium-89	1.0E-11	1.0E-14
Strontium-90	1.0E-11	1.0E-15

NOTE:
(1) LLD values are in μCi/cc.

SOLID WASTE (RADIOACTIVE SHIPMENTS)

Solid Waste Shipped Offsite for Burial or Disposal (not Irradiated Fuel)

1. Type of Waste	Unit	12 Month Period	Est. Tot. Error %
a. Spent Resins, Filter Sludges, Evaporator Bottoms, etc.	m^3	15.8	±5.00E-01
	Ci	1.04E+02	±2.29E+01
b. Dry Active Waste, Compressible Waste Contaminated Equipment, etc.	m^3	940	±1.00E+01
	Ci	2.58E+00	±2.29E+01
c. Irradiated Components, Control Rods, etc.	m^3	None	N/A
	Ci	None	N/A
d. Other: Asbestos Sent for Processing	m^3	None	N/A
	Ci	None	N/A

The reported volume for "category a" waste is based on the volume of the disposal container. Waste volumes for categories b, c, and d are based on the net waste volume rather than the shipping container volume. During transit, the waste for categories b and d may settle resulting in an overall reduced volume. The reduction in disposal volume is estimated to be 10 percent due to settling. Volume estimates for category b and d wastes were based on a visual inspection of the container's contents and its percent full.

The estimated total error (percent) for the total Curies shipped is based on calculating the square root of the sum of the squares method. Three parameters were considered as important for estimating the error. The parameters were variances with sample preparation and counting geometry, survey instrument accuracy for dose to Curie evaluations, and "in-field" sampling techniques. The assigned values for these parameters were 20, 10, and 5 percent, respectively.

$$\text{Total error (\%)} = (0.20^2 + 0.10^2 + 0.05^2)^{1/2} \times 100 = 22.9\%$$

2. Estimate of Major Nuclide Composition (by type of waste)

a. Spent resins, filter sludges, evaporator bottoms, etc. (nuclides determined by measurement)

		Curies	Percent
1.	Hydrogen-3	1.85E-02	0.02
2.	Carbon-14	7.00E-01	0.67
3.	Chromium-51	4.42E-04	0.00
4.	Manganese-54	1.92E+00	1.84
5.	Iron-55	3.98E+00	3.82
6.	Iron-59	1.24E-04	0.00
7.	Cobalt-57	5.51E-02	0.05
8.	Cobalt-58	2.33E-01	0.22
9.	Cobalt-60	3.87E+01	37.14
10.	Nickel-59	1.55E-01	0.15
11.	Nickel-63	5.44E+01	52.20
12.	Zinc-65	3.95E-01	0.38
13.	Krypton-85	2.94E-02	0.03
14.	Strontium-89	8.47E-10	0.00
15.	Strontium-90	7.07E-03	0.01
16.	Zirconium-95	1.22E-02	0.01
17.	Niobium-95	2.70E-02	0.03
18.	Technitium-99	2.51E-03	0.00
19.	Silver-110m	5.94E-08	0.00
20.	Tin-113	2.94E-03	0.00
21.	Antimony-124	4.69E-04	0.00
22.	Antimony-125	1.63E+00	1.57
23.	Cesium-134	1.23E-01	0.12
24.	Cesium-137	1.66E+00	1.59
25.	Cerium-144	1.34E-01	0.13
26.	Plutonium-238	2.64E-05	0.00
27.	Plutonium-239	5.87E-06	0.00
28.	Plutonium-240	5.87E-06	0.00
29.	Plutonium-241	2.71E-02	0.03
30.	Americium-241	2.07E-04	0.00
31.	Curium-242	1.38E-07	0.00
32.	Curium-243	1.65E-04	0.00
33.	Curium-244	1.44E-04	0.00

SOLID WASTE (RADIOACTIVE SHIPMENTS) (continued)

b. Dry active waste, compressible waste, contaminated equipment, etc. (nuclides determined by estimate)

		Curies	Percent
1.	Hydrogen-3	5.87E-03	0.23
2.	Carbon-14	3.24E-06	0.00
3.	Chromium-51	9.88E-01	38.32
4.	Manganese-54	7.63E-02	2.96
5.	Iron-55	2.07E-01	8.02
6.	Iron-59	2.75E-02	1.07
7.	Cobalt-57	1.25E-03	0.05
8.	Cobalt-58	3.44E-01	13.34
9.	Cobalt-60	2.44E-01	9.45
10.	Nickel-63	1.11E-02	0.43
11.	Zinc-65	9.98E-03	0.39
12.	Strontium-89	1.47E-06	0.00
13.	Strontium-90	7.75E-06	0.00
14.	Zirconium-95	2.24E-01	8.68
15.	Niobium-95	4.19E-01	16.26
16.	Antimony-124	1.61E-03	0.06
17.	Antimony-125	1.16E-05	0.00
18.	Cesium-137	4.95E-03	0.19
19.	Cerium-144	1.43E-02	0.56
20.	Plutoniuu-238	7.60E-07	0.00
21.	Plutonium-239	4.05E-07	0.00
22.	Plutonium-240	4.05E-07	0.00
23.	Plutonium-241	6.96E-06	0.00
24.	Americium-241	9.00E-07	0.00
25.	Curium-243	5.18E-07	0.00
26.	Curium-244	5.18E-07	0.00

c. Irradiated Components	Curies	Percent
None	N/A	N/A

d. Other:	Curies	Percent
None	N/A	N/A

SOLID WASTE (RADIOACTIVE SHIPMENTS) (continued)

3. Solid Waste Disposition

a. Spent resins, filter sludges, evaporator bottoms, etc.

Number of Shipments	Type Quantity	Mode of Transportation	Destination
1	AU	Motor Freight	EnergySolutions Services, Inc. 1560 Bear Creek Rd. Oak Ridge, TN
1	AU	Motor Freight	EnergySolutions Services, LLC Clive Disposal Site Containerized Waste Facility Interstate 80, Exit 49 Clive, UT 84029
1	B	Motor Freight	Waste Control Specialist, LLC Compact Waste Disposal Facility 9998 W. State Hwy. 176 Andrews, TX 79714
1	C	Motor Freight	Waste Control Specialist, LLC Compact Waste Disposal Facility 9998 W. State Hwy. 176 Andrews, TX 79714

b. Dry active waste, compressible waste, contaminated equipment, etc.

Number of Shipments	Type Quantity	Mode of Transportation	Destination
1	LQ	Motor Freight	EnergySolutions Services , Inc. 1560 Bear Creek Rd. Oak Ridge, TN
5	A-LSA II	Motor Freight	TOXCO Inc. TOXCO Materials Management Center 109 Flint Rd. Oak Ridge, TN
4	A-LSA II Limited Quantity	Motor Freight	TOXCO Inc. TOXCO Materials Management Center 109 Flint Rd. Oak Ridge, TN
12	Limited Quantity	Motor Freight	TOXCO Inc. TOXCO Materials Management Center 109 Flint Rd. Oak Ridge, TN

c. Irradiated components, control rods, etc.

Number of Shipments	Type Quantity	Mode of Transportation	Destination
None	N/A	N/A	N/A

d. Other: Asbestos for processing

Number of Shipments	Type Quantity	Mode of Transportation	Destination
None	N/A	N/A	N/A

4. Irradiated Fuel Shipments (Disposition)

Number of Shipments	Type Quantity	Mode of Transportation	Destination
None	N/A	N/A	N/A

5. Solidification of Waste

Was solidification performed? No
If yes, solidification media: N/A

Independent Spent Fuel Storage Installation

SQN implemented use of an independent spent fuel storage installation (ISFSI) on July13, 2004. 10 CFR 72.214 Certificate of Compliance (CoC) Nos. 1014 and 1032 correspond to the two certificates of the spent fuel storage systems in use at the ISFSI. The ISFSI is located on site, within the protected area and is designed to hold 90 spent fuel storage canisters (SFSCs). CoC Nos. 1014 and 1032 Appendix A Chapter 5 requires an annual report in accordance with 10 CFR 72.44(d)(3). CoC Nos. 1014 and 1032 Chapter 5 also provides that the ISFSI operations may be considered part of plant operations for the purposes of the radiological environmental monitoring program.

CoC No. 1014 Section 5.4a states "The HI-STORM 100 Cask System does not create any radioactive material or have any radioactive waste treatment systems. Therefore, specific operating procedures for the control of radioactive effluents are not required. Specification 3.1.1, Multi-Purpose Canister (MPC), provides assurance that there are not radioactive effluents from SFSC."

CoC No. 1032 Section 5.1a states, "The HI-STORM FW MPC Storage System does not create any radioactive materials or have any radioactive waste treatment systems. Therefore, specific operating procedures for the control of radioactive effluents are not required. Specification 3.1.1, Multi-Purpose Canister (MPC), provides assurance that there are not radioactive effluents from the SFSC."

The Environmental Protection Agency limits for the total dose to the public in the vicinity of a nuclear power plant, established in the Environmental Dose Standard of 40 CFR 190, are as follows:

Total Body	≤25 mrem/year
Thyroid	≤75 mrem/year
Any other organ	≤25 mrem/year

Although CoC Nos. 1014 and 1032 provide that the HI-STORM 100 Cask System and HI-STORM FW MPC Storage System do not create any radioactive material or have any radioactive waste treatment systems, for this report, total site releases include the SQN ISFSI as part of the SQN site and part of plant operations. These releases are within 40 CFR 190 limits and 10 CFR 72.104 limits.

ENCLOSURE 2

RADIOLOGICAL IMPACT ASSESSMENT REPORT

SEQUOYAH NUCLEAR PLANT

JANUARY - DECEMBER 2019

INTRODUCTION

Potential doses to maximum individuals and the population around Sequoyah Nuclear Plant (SQN) are calculated for each quarter as required in Section 5.2 of the Offsite Dose Calculation Manual (ODCM). Measured plant releases for the reporting period are used to estimate these doses. Dispersion of radioactive effluents in the environment is estimated using meteorological data and riverflow data measured during the period. In this report, the doses resulting from releases are described and compared to limits established for SQN.

DOSE LIMITS

The ODCM specifies limits for the release of radioactive effluents, as well as limits for doses to the general public from the release of radioactive effluents. These limits are set well below the technical specification limits which govern the concentrations of radioactivity and doses permissible in unrestricted areas. This ensures that radioactive effluent releases are "As Low As Reasonably Achievable."

The limits for doses in unrestricted areas from airborne noble gases released are:

Less than or equal to 5 mrad per quarter and
10 mrad per year (per reactor unit) for gamma radiation,
- and -
Less than or equal to 10 mrad per quarter and
20 mrad per year (per reactor unit) for beta radiation.

The limit for the dose to a member of the general public in an unrestricted area from iodines and particulates released in airborne effluents is:

Less than or equal to 7.5 mrem per quarter and
15 mrem per year (per reactor unit) to any organ.

The limits for doses to a member of the general public from radioactive material in liquid effluents released to unrestricted areas are:

Less than or equal to 1.5 mrem per quarter and
3 mrem per year (per reactor unit) to the total body,
- and -
Less than or equal to 5 mrem per quarter and
10 mrem per year (per reactor unit) to any organ

The Environmental Protection Agency limits for total dose to the public in the vicinity of a nuclear power plant, established in the Environmental Dose Standard of 40 CFR 190 are:

Less than or equal to 25 mrem per year to the total body,
Less than or equal to 75 mrem per year to the thyroid,
- and -
Less than or equal to 25 mrem per year to any other organ.

DOSE CALCULATIONS

Estimated doses to the public are determined using computer models: Gaseous Effluent Licensing Code (GELC), and the Quarterly Water Dose Assessment Code (QWATA). These models are based on guidance provided by the NRC (in Regulatory Guides 1.109, 1.111 and 1.113) for determining the potential dose to individuals and populations living in the vicinity of the plant. The area around the plant is analyzed to determine the pathways through which the public may receive a dose. The doses calculated are a representation of the dose to a "maximum exposed individual." Some of the factors used in these calculations (such as ingestion rates) are maximum values. Many of these factors are obtained from NUREG/CR-1004. The values chosen will tend to overestimate the dose to this "maximum" person. The expected dose to actual individuals is lower. The calculated doses are presented in Tables 1 through 9.

DOSES FROM AIRBORNE EFFLUENTS

For airborne effluents, the public can be exposed to radiation from several sources: direct radiation from the radioactivity in the air, direct radiation from radioactivity deposited on the ground, inhalation of airborne radioactivity, ingestion of vegetation which contains radioactivity deposited from the atmosphere, and ingestion of milk and beef which contains radioactivity deposited from the atmosphere onto vegetation and subsequently eaten by milk and beef animals.

Airborne Discharge Points

Releases from SQN are considered ground-level releases. The ground-level Joint Frequency Distribution (JFD) is derived from windspeeds and directions measured 10 meters above ground and from the vertical temperature difference between 10 and 46 meters, and are presented for each quarter in Attachment 1.

Meteorological Data

Meteorological variables at SQN are measured continuously. Measurements collected include wind speed, wind direction, and temperature at heights of 10, 46, and 91 meters above the ground. Quarterly JFD are calculated for each release point using the appropriate levels of meteorological data. A JFD gives the percentage of the time in a quarter that the wind is blowing out of a particular upwind compass sector in a particular range of wind speeds for a given stability Class A through G. The wind speeds are divided into nine wind speed ranges. Calms are distributed by direction in proportion to the distribution of noncalm wind directions less than 0.7 m/s (1.5 mph). Stability classes are determined from the vertical temperature difference between two measurement levels.

External Exposure Dose

Dose estimates for maximum external air dose (gamma-air and beta-air doses) are made for points at and beyond the unrestricted area boundary as described in the SQN ODCM. The highest of these doses is then selected.

Submersion Dose

External doses to the skin and total body, due to submersion in a cloud of noble gases, are estimated for the nearest residence in each sector. The residence with the highest dose is then selected from all sectors.

Organ Dose

Doses to organs due to releases of airborne effluents are estimated for the inhalation, ground contamination, and ingestion pathways. The ingestion pathway is further divided into four possible contributing pathways: ingestion of cow/goat milk, ingestion of beef, and ingestion of vegetables. Doses from applicable pathways are calculated for each real receptor location identified in the most recent land use survey. To determine the maximum organ dose, the doses from the pathways are summed for each receptor. For the ingestion dose, however, only those pathways that exist for each receptor are considered in the sum, i.e., milk ingestion doses are included only for locations where milk is consumed without commercial preparation and vegetable ingestion is included only for those locations where a garden is identified. To conservatively account for beef ingestion, a beef ingestion dose equal to that for the highest unrestricted area boundary location is added to each identified receptor. For ground contamination, the dose added to the organ dose being calculated is the total body dose calculated for that location, i.e., it is assumed that the dose to an individual organ is equal to the total body dose.

Doses from airborne effluents are presented in Tables 1-4.

DOSES FROM LIQUID EFFLUENTS

For liquid effluents, the public can be exposed to radiation from three sources: the ingestion of water from the Tennessee River, the ingestion of fish caught in the Tennessee River, and direct exposure from radioactive material deposited on the river shoreline sediment (recreation).

The concentrations of radioactivity in the Tennessee River are estimated by a computer model which uses measured hydraulic data downstream of SQN. Parameters used to determine the doses are based on guidance given by the NRC (in Regulatory Guides 1.109) for maximum ingestion rates, exposure times, etc. Wherever possible, parameters used in the dose calculation are site specific use factors determined by TVA. The models that are used to estimate doses, as well as the parameters input to the models, are described in detail in the SQN ODCM.

Liquid Release Points and River Data

Radioactivity concentrations in the Tennessee River are calculated assuming that releases in liquid effluents are continuous. Routine liquid releases from SQN, located at Tennessee River Mile 484, are made through diffusers which extend into the Tennessee River. It is assumed that releases to the river through these diffusers will initially be entrained in one-fifth of the water which flows past the plant. The QWATA code makes the assumption that this mixing condition holds true until the water is completely mixed at the first downstream dam, at Tennessee River Mile 471.

Doses are calculated for locations within a 50-mile radius downstream of the plant site. The maximum potential recreation dose is calculated for a location immediately downstream from the plant outfall. The maximum individual dose from ingestion of fish is assumed to be that calculated for the consumption of fish caught anywhere between the plant and the first downstream dam (Chickamauga Dam). The maximum individual dose from drinking water is assumed to be that calculated at the nearest downstream public water supply (East Side Utilities). This could be interpreted as indicating that the maximum individual, as assumed for liquid releases from Sequoyah, is an individual who obtains all of his drinking water at East Side Utilities, consumes fish caught from the Tennessee River between SQN and Chickamauga Dam, and spends 500 hours per year on the shoreline just below the outfall from Sequoyah. Dose estimates for the maximum individual due to liquid effluents for each quarter in the period are presented in Tables 5-8, along with the average river flows past the plant site for the periods.

Population doses are calculated assuming that each individual consumes milk, vegetables, and meat produced within the sector annulus in which he resides. Doses from external pathways and inhalation are based on the 50-mile human population distribution.

POPULATION DOSES

Population doses for the highest exposed organ due to airborne effluents are calculated for an estimated 1,060,000 persons living within a 50-mile radius of the plant site. Doses from external pathways and inhalation are based on the 50-mile human population distribution.

Ingestion population doses for total body and the maximum exposed organ due to liquid effluents are calculated for the entire downstream Tennessee River population. Water ingestion population doses are calculated using actual population figures for downstream public water supplies. Fish ingestion population doses are calculated assuming that all sport fish caught in the Tennessee River are consumed by the Tennessee River population. Recreation population doses are calculated using actual recreational data on the number of shoreline visits at downstream locations.

Population dose estimates for airborne and liquid effluents are presented in Tables 1-4 and Tables 5-8.

DIRECT RADIATION

External gamma radiation levels were measured by dosimeters deployed around SQN as part of the offsite REMP. The quarterly gamma radiation levels determined from these dosimeters during this reporting period averaged approximately 14.0 mrem/quarter at onsite (at or near the site boundary) stations and approximately 13.1 mrem/quarter at offsite stations, or approximately 0.9 mrem/quarter higher at onsite than at offsite stations. This difference is consistent with levels measured for preoperation and construction phases of the TVA nuclear plant site where the average radiation levels onsite were generally 1-3 mrem/quarter higher than the levels offsite. This may be attributable to natural variations in environmental radiation levels, earth moving activities onsite, the mass of concrete employed in the construction of the plants, or other undetermined influences. Fluctuations in natural background dose rates and in dosimeter readings tend to mask any small increments which may be due to plant operations. Thus, there

was no identifiable increase in dose rate levels attributable to direct radiation from plant equipment and/or gaseous effluents.

DOSE TO A MEMBER OF THE PUBLIC INSIDE THE UNRESTRICTED AREA BOUNDARY

As stated in the SQN ODCM, an evaluation of the dose to a member of the public inside the unrestricted area boundary is performed for a hypothetical TVA employee who works just outside the restricted area fence for an entire work year (2000/8760 hours). Results from onsite dosimeter measurements for the calendar year in question indicate that the highest onsite dosimeter reading was 22 mrem after subtraction of the annual background value of 63 mrem/year (from perimeter dosimeters around Sequoyah and Area dosimeter posting data for the year). Using this value and multiplying by the ratio of the occupancy times (2000/8760), the external dose was 5.02 mrem. The doses due to radioactive effluents released to the atmosphere calculated in this report would not add a significant amount to this measured dose. This dose is well below the 10 CFR 20 annual limit of 100 mrem.

TOTAL DOSE

To determine compliance with 40 CFR 190, annual total dose contributions to the maximum individual from SQN radioactive effluents and other nearby uranium fuel cycle sources are considered.

The annual dose to any organ other than thyroid for the maximum individual is conservatively estimated by summing the following doses: the total body air submersion dose for each quarter, the critical organ dose (for any organ other than the thyroid) from airborne effluents for each quarter from ground contamination, inhalation and ingestion, the total body dose from liquid effluents for each quarter, the maximum organ dose (for any organ other than the thyroid) from liquid effluents for each quarter, and any identifiable increase in direct radiation dose levels as measured by the environmental monitoring program. This dose is compared to the 40 CFR 190 limit for total body or any organ dose (other than thyroid) to determine compliance.

The annual thyroid dose to the maximum individual is conservatively estimated by summing the following doses: the total body air submersion dose for each quarter, the thyroid dose from airborne effluents for each quarter, the total body dose from liquid effluents for each quarter, the thyroid dose from liquid effluents for each quarter, and any identifiable increase in direct radiation dose levels as measured by the environmental monitoring program. This dose is compared to the 40 CFR 190 limit for thyroid dose to determine compliance.

Cumulative annual total doses are presented in Table 9 “Total Dose from Fuel Cycle.”

Tables 1 and 2
Doses from Airborne Effluents

First Quarter

Individual Doses

Pathway	Dose	Quarterly Limit	Percent of Limit	Location Sector/Distance/Unit	X/Q (sec/m^3)	D/Q ($1/m^2$)
External						
Gamma Air	1.73E-04	5 mrad	<1	SSW/1840/meters	4.78E-06	1.18E-08
Beta Air	7.68E-05	10 mrad	<1	SSW/1840/meters	4.78E-06	1.18E-08
Submersion						
Total Body	1.29E-04	10 mrad	<1	SSW/2129/meters	3.88E-06	9.18E-09
Skin	1.94E-04	10 mrad	<1	SSW/2129/meters	3.88E-06	9.18E-09
Organ Doses[1]						
(Max) Child/Bone	3.32E-01	7.5 mrem	4.4	SSW/4532/meters	1.31E-06	2.50E-09
Child/Thyroid	6.66E-02	7.5 mrem	<1	SSW/4532/meters	1.31E-06	2.50E-09
Child/Total Body	6.66E-02	7.5 mrem	<1	SSW/4532/meters	1.31E-06	2.50E-09

Population Doses

Total Body Dose 4.77E-01 man-rem
Maximum Organ Dose (organ) 2.37E+00 man-rem (Bone)

Second Quarter

Individual Doses

Pathway	Dose	Quarterly Limit	Percent of Limit	Location Sector/Distance/Unit	X/Q (sec/m^3)	D/Q ($1/m^2$)
External						
Gamma Air	2.51E-04	5 mrad	<1	N/950/meters	6.96E-06	1.56E-08
Beta Air	9.63E-05	10 mrad	<1	N/950/meters	6.96E-06	1.56E-08
Submersion						
Total Body	1.78E-04	10 mrad	<1	NNW/864/meters	5.31E-06	6.94E-09
Skin	2.64E-04	10 mrad	<1	NNW/864/meters	5.31E-06	6.94E-09
Organ Doses[1]						
(Max) Child/Bone	5.04E-01	7.5 mrem	6.7	WSW/1152/meters	1.74E-06	1.71E-09
Child/Thyroid	1.01E-01	7.5 mrem	1.3	WSW/1152/meters	1.74E-06	1.71E-09
Child/Total Body	1.01E-01	7.5 mrem	1.3	WSW/1152/meters	1.74E-06	1.71E-09

Population Doses

Total Body Dose 5.36E-01 man-rem
Maximum Organ Dose (organ) 2.67E+00 man-rem (Bone)

Population doses can be compared to the natural background dose for the entire 50-mile population of about 95,400 man-rem/year (based on 90 mrem/year for natural background).

[1]Organ Doses include contributions from Carbon-14 in the form of Carbon Dioxide.

Tables 3 and 4
Doses from Airborne Effluents

Third Quarter

Individual Doses

Pathway	Dose	Quarterly Limit	Percent of Limit	Location Sector/Distance/Unit	X/Q (sec/m^3)	D/Q ($1/m^2$)
External						
Gamma Air	3.84E-04	5 mrad	<1	SSW/1840/meters	6.37E-06	1.07E-08
Beta Air	1.39E-04	10 mrad	<1	SSW/1840/meters	6.37E-06	1.07E-08
Submersion						
Total Body	2.84E-04	10 mrad	<1	SSW/2129/meters	5.17E-06	8.32E-09
Skin	4.20E-04	10 mrad	<1	SSW/2129/meters	5.17E-06	8.32E-09
Organ Doses[1]						
(Max) Child/Bone	4.38E-01	7.5 mrem	5.8	SSW/4532/meters	1.76E-06	2.27E-09
Child/Thyroid	8.80E-02	7.5 mrem	1.2	SSW/4532/meters	1.76E-06	2.27E-09
Child/Total Body	8.80E-02	7.5 mrem	1.2	SSW/4532/meters	1.76E-06	2.27E-09

Population Doses

Total Body Dose 5.56E-01 man-rem
Maximum Organ Dose (organ) 2.75E+00 man-rem (Bone)

Fourth Quarter

Individual Doses

Pathway	Dose	Quarterly Limit	Percent of Limit	Location Sector/Distance/Unit	X/Q (sec/m^3)	D/Q ($1/m^2$)
External						
Gamma Air	5.98E-03	5 mrad	<1	SSW/1840/meters	5.71E-06	1.25E-08
Beta Air	2.12E-03	10 mrad	<1	SSW/1840/meters	5.71E-06	1.25E-08
Submersion						
Total Body	4.46E-03	10 mrad	<1	SSW/2129/meters	4.64E-06	9.79E-09
Skin	6.57E-03	10 mrad	<1	SSW/2129/meters	4.64E-06	9.79E-09
Organ Doses[1]						
(Max) Child/Bone	3.16E-01	7.5 mrem	4.2	WSW/1152/meters	1.74E-06	2.06-09
Child/Thyroid	6.72E-02	7.5 mrem	<1	WSW/1152/meters	1.74E-06	2.06-09
Child/Total Body	6.72E-02	7.5 mrem	<1	WSW/1152/meters	1.74E-06	2.06-09

Population Doses

Total Body Dose 4.63E-01 man-rem
Maximum Organ Dose (organ) 2.11E+00 man-rem (Bone)

Population doses can be compared to the natural background dose for the entire 50-mile population of about 95,400 man-rem/year (based on 90 mrem/year for natural background).

[1]Organ Doses include contributions from Carbon-14 in the form of Carbon Dioxide.

Tables 5 and 6
Doses from Liquid Effluents

First Quarter

Individual Doses (mrem)

Age Group	Organ	Dose	Quarterly Limit	Percent of Limit
Child	Total Body	7.50E-05	1.5 mrem	< 1 %
Child	Bone	8.40E-05	5 mrem	< 1 %
Child	Thyroid	7.40E-05	5 mrem	< 1 %

Average Riverflow past SQN (cubic feet per second): 107186

Population Doses

Total Body Dose 6.10E-03 man-rem
Maximum Organ Dose (organ) 6.30E-03 man-rem (Bone)

Second Quarter

Individual Doses (mrem)

Age Group	Organ	Dose	Quarterly Limit	Percent of Limit
Child	Total Body	1.90E-03	1.5 mrem	< 1 %
Child	Bone	2.40E-03	5 mrem	< 1 %
Child	Thyroid	1.90E-03	5 mrem	< 1 %

Average Riverflow past SQN (cubic feet per second): 37902

Population Doses

Total Body Dose 1.30E-01 man-rem
Maximum Organ Dose (organ) 1.40E-01 man-rem (Bone)

Population doses can be compared to the natural background dose for the entire 50-mile population of about 95,400 man-rem/year (based on 90 mrem/year for natural background).

Tables 7 and 8
Doses from Liquid Effluents

Third Quarter

Individual Doses (mrem)

Age Group	Organ	Dose	Quarterly Limit	Percent of Limit
Child	Total Body	6.80E-03	1.5 mrem	< 1 %
Child	Bone	6.90E-03	5 mrem	< 1 %
Child	Thyroid	6.80E-03	5 mrem	< 1 %

Average Riverflow past SQN (cubic feet per second): 27444

Population Doses

Total Body Dose 4.7E-01 man-rem
Maximum Organ Dose (organ) 4.7E-01 man-rem (GIT, Bone, Liver, Lung, Kidney, Thyroid)

Fourth Quarter

Individual Doses (mrem)

Age Group	Organ	Dose	Quarterly Limit	Percent of Limit
Child	Total Body	2.40E-03	1.5 mrem	< 1 %
Child	Bone	2.40E-03	5 mrem	< 1 %
Child	Thyroid	2.40E-03	5 mrem	< 1 %

Average Riverflow past SQN (cubic feet per second): 41216

Population Doses

Total Body Dose 1.6E-01 man-rem
Maximum Organ Dose (organ) 1.6E-01 man-rem (GIT, Bone, Liver, Lung, Kidney, Thyroid)

Population doses can be compared to the natural background dose for the entire 50-mile population of about 95,400 man-rem/year (based on 90 mrem/year for natural background).

Table 9

Total Dose from Fuel Cycle

Dose	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	
Total Body or any Organ (except thyroid)					
Total body air submersion	1.29E-04	1.78E-04	2.84E-04	4.46E-03	
Critical organ dose (air)	3.32E-01	5.04E-01	4.38E-01	3.16E-01	
Total body dose (liquid)	7.50E-05	1.90E-03	6.80E-03	2.40E-03	
Maximum organ dose (liquid)	8.40E-05	2.40E-03	6.90E-03	2.40E-03	
Direct Radiation Dose	0.00E+01	0.00E+01	0.00E+01	0.00E+01	
Total	3.32E-01	5.08E-01	4.52E-01	3.25E-01	
Cumulative Total Dose (Total body or any other organ) mrem					1.62E+00
Annual Dose Limit (mrem)					25
Percent of Limit					6.48
Thyroid Dose (mrem)					
Total body air submersion	1.29E-04	1.78E-04	2.84E-04	4.46E-03	
Thyroid dose (airborne)	6.66E-02	1.01E-01	8.80E-02	6.72E-02	
Total body dose (liquid)	7.50E-05	1.90E-03	6.80E-03	2.40E-03	
Thyroid dose (liquid)	7.40E-05	1.90E-03	6.80E-03	2.40E-03	
Direct Radiation Dose	0.00E+01	0.00E+01	0.00E+01	0.00E+01	
Total	6.69E-02	1.05E-01	1.02E-01	7.65E-02	
Cumulative Total Dose (Thyroid) mrem					3.50E-01
Annual Dose Limit (mrem)					75
Percent of Limit					0.47

Attachment 1

Joint Frequency Distribution Tables

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS A (DELTA T<=-1.9 C/100 M)

SEQUOYAH NUCLEAR PLANT

JAN 1, 2019 - MAR 31, 2019

WIND DIRECTION	WIND SPEED(MPH) CALM	0.60-1.40	1.41-3.40	3.41-5.40	5.41-7.40	7.41-12.40	12.41-18.40	18.41-24.40	>=24.41	TOTAL
N	0.000	0.000	0.000	0.000	0.000	0.186	0.000	0.000	0.000	0.186
NNE	0.000	0.000	0.000	0.000	0.186	0.604	0.000	0.000	0.000	0.790
NE	0.000	0.000	0.000	0.093	0.232	0.232	0.000	0.000	0.000	0.557
ENE	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.046
E	0.000	0.000	0.000	0.046	0.046	0.000	0.000	0.000	0.000	0.093
ESE	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.046
SE	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.046
SSE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
S	0.000	0.000	0.000	0.000	0.046	0.093	0.000	0.000	0.000	0.139
SSW	0.000	0.000	0.000	0.093	0.279	0.232	0.000	0.000	0.000	0.604
SW	0.000	0.000	0.000	0.046	0.186	0.186	0.000	0.000	0.000	0.418
WSW	0.000	0.000	0.000	0.000	0.000	0.093	0.000	0.000	0.000	0.093
W	0.000	0.000	0.000	0.000	0.186	0.000	0.000	0.000	0.000	0.186
WNW	0.000	0.000	0.000	0.046	0.139	0.418	0.000	0.000	0.000	0.604
NW	0.000	0.000	0.000	0.000	0.093	0.372	0.000	0.000	0.000	0.464
NNW	0.000	0.000	0.000	0.000	0.186	0.232	0.000	0.000	0.000	0.418
SUBTOTAL	0.000	0.000	0.000	0.464	1.579	2.647	0.000	0.000	0.000	4.691

TOTAL HOURS OF VALID STABILITY OBSERVATIONS 2153
TOTAL HOURS OF STABILITY CLASS A 101
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS A 101
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS 2153
TOTAL HOURS CALM 0

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT
STABILITY BASED ON DELTA-T BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT 9.73 METER LEVEL

DATE PRINTED: 2019/05/15

MEAN WIND SPEED = 7.43

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS B (-1.9< DELTA T<=-1.7 C/100 M)

SEQUOYAH NUCLEAR PLANT

JAN 1, 2019 - MAR 31, 2019

WIND DIRECTION	WIND SPEED(MPH) CALM	0.60-1.40	1.41-3.40	3.41-5.40	5.41-7.40	7.41-12.40	12.41-18.40	18.41-24.40	>=24.41	TOTAL
N	0.000	0.000	0.000	0.046	0.186	0.232	0.000	0.000	0.000	0.464
NNE	0.000	0.000	0.000	0.000	0.279	0.372	0.046	0.000	0.000	0.697
NE	0.000	0.000	0.000	0.046	0.139	0.046	0.000	0.000	0.000	0.232
ENE	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.046
E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ESE	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.046
SE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
S	0.000	0.000	0.000	0.093	0.046	0.046	0.000	0.000	0.000	0.186
SSW	0.000	0.000	0.000	0.139	0.604	0.186	0.000	0.000	0.000	0.929
SW	0.000	0.000	0.000	0.046	0.139	0.046	0.000	0.000	0.000	0.232
WSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
W	0.000	0.000	0.000	0.046	0.046	0.046	0.000	0.000	0.000	0.139
WNW	0.000	0.000	0.000	0.000	0.000	0.093	0.000	0.000	0.000	0.093
NW	0.000	0.000	0.000	0.046	0.093	0.046	0.000	0.000	0.000	0.186
NNW	0.000	0.000	0.000	0.046	0.046	0.093	0.000	0.000	0.000	0.186
SUBTOTAL	0.000	0.000	0.000	0.604	1.579	1.208	0.046	0.000	0.000	3.437

TOTAL HOURS OF VALID STABILITY OBSERVATIONS 2153
TOTAL HOURS OF STABILITY CLASS B 74
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS B 74
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS 2153
TOTAL HOURS CALM 0

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT
STABILITY BASED ON DELTA-T BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT 9.73 METER LEVEL

DATE PRINTED: 2019/05/15

MEAN WIND SPEED = 6.90

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS C (-1.7< DELTA T<=-1.5 C/100 M)

SEQUOYAH NUCLEAR PLANT

JAN 1, 2019 - MAR 31, 2019

WIND DIRECTION	WIND SPEED(MPH) CALM	0.60-1.40	1.41-3.40	3.41-5.40	5.41-7.40	7.41-12.40	12.41-18.40	18.41-24.40	>=24.41	TOTAL
N	0.000	0.000	0.046	0.046	0.279	0.139	0.000	0.000	0.000	0.511
NNE	0.000	0.000	0.000	0.093	0.279	0.511	0.046	0.000	0.000	0.929
NE	0.000	0.000	0.139	0.186	0.000	0.093	0.000	0.000	0.000	0.418
ENE	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.046
E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ESE	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.046
SE	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.046
SSE	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.046
S	0.000	0.000	0.000	0.186	0.000	0.139	0.000	0.000	0.000	0.325
SSW	0.000	0.000	0.046	0.836	0.372	0.046	0.000	0.000	0.000	1.301
SW	0.000	0.000	0.046	0.139	0.372	0.000	0.000	0.000	0.000	0.557
WSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
W	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WNW	0.000	0.000	0.046	0.000	0.186	0.000	0.000	0.000	0.000	0.232
NW	0.000	0.000	0.000	0.093	0.046	0.046	0.000	0.000	0.000	0.186
NNW	0.000	0.000	0.000	0.093	0.232	0.139	0.000	0.000	0.000	0.464
SUBTOTAL	0.000	0.000	0.418	1.765	1.765	1.115	0.046	0.000	0.000	5.109

TOTAL HOURS OF VALID STABILITY OBSERVATIONS 2153
TOTAL HOURS OF STABILITY CLASS C 110
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS C 110
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS 2153
TOTAL HOURS CALM 0

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT
STABILITY BASED ON DELTA-T BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT 9.73 METER LEVEL

DATE PRINTED: 2019/05/15

MEAN WIND SPEED = 6.13

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS D (-1.5< DELTA T<=-0.5 C/100 M)

SEQUOYAH NUCLEAR PLANT

JAN 1, 2019 - MAR 31, 2019

WIND DIRECTION	WIND SPEED(MPH) CALM	0.60-1.40	1.41-3.40	3.41-5.40	5.41-7.40	7.41-12.40	12.41-18.40	18.41-24.40	>=24.41	TOTAL
N	0.000	0.000	1.068	1.486	1.811	1.719	0.000	0.000	0.000	6.085
NNE	0.000	0.093	2.415	3.576	2.601	2.369	0.046	0.000	0.000	11.101
NE	0.000	0.046	1.440	0.325	0.325	0.046	0.000	0.000	0.000	2.183
ENE	0.000	0.000	0.279	0.046	0.000	0.000	0.000	0.000	0.000	0.325
E	0.000	0.000	0.139	0.000	0.000	0.000	0.000	0.000	0.000	0.139
ESE	0.000	0.000	0.093	0.046	0.000	0.000	0.000	0.000	0.000	0.139
SE	0.000	0.093	0.093	0.000	0.000	0.000	0.000	0.000	0.000	0.186
SSE	0.000	0.093	0.186	0.000	0.000	0.093	0.000	0.000	0.000	0.372
S	0.000	0.000	0.650	0.511	0.093	0.418	0.000	0.000	0.000	1.672
SSW	0.000	0.000	1.161	2.229	0.836	0.604	0.000	0.000	0.000	4.830
SW	0.000	0.000	1.161	1.254	0.697	0.093	0.000	0.000	0.000	3.205
WSW	0.000	0.046	0.093	0.139	0.279	0.093	0.000	0.000	0.000	0.650
W	0.000	0.093	0.186	0.325	0.046	0.186	0.000	0.000	0.000	0.836
WNW	0.000	0.046	0.325	0.279	0.139	0.372	0.000	0.000	0.000	1.161
NW	0.000	0.093	0.557	0.650	0.511	0.232	0.000	0.000	0.000	2.044
NNW	0.000	0.000	0.557	1.393	0.882	1.068	0.000	0.000	0.000	3.902
SUBTOTAL	0.000	0.604	10.404	12.262	8.221	7.292	0.046	0.000	0.000	38.830

TOTAL HOURS OF VALID STABILITY OBSERVATIONS 2153
TOTAL HOURS OF STABILITY CLASS D 836
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS D 836
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS 2153
TOTAL HOURS CALM 0

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT
STABILITY BASED ON DELTA-T BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT 9.73 METER LEVEL

DATE PRINTED: 2019/05/15

MEAN WIND SPEED = 5.10

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS E (-0.5< DELTA T<= 1.5 C/100 M)

SEQUOYAH NUCLEAR PLANT

JAN 1, 2019 - MAR 31, 2019

WIND DIRECTION	WIND SPEED(MPH) CALM	0.60-1.40	1.41-3.40	3.41-5.40	5.41-7.40	7.41-12.40	12.41-18.40	18.41-24.40	>=24.41	TOTAL
N	0.000	0.279	1.672	1.161	0.372	0.139	0.000	0.000	0.000	3.623
NNE	0.000	0.743	2.740	1.579	0.929	0.232	0.000	0.000	0.000	6.224
NE	0.000	0.279	1.022	0.186	0.000	0.000	0.000	0.000	0.000	1.486
ENE	0.000	0.139	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.186
E	0.000	0.046	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.093
ESE	0.000	0.093	0.139	0.000	0.000	0.000	0.000	0.000	0.000	0.232
SE	0.000	0.139	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.139
SSE	0.000	0.046	0.418	0.000	0.000	0.046	0.000	0.000	0.000	0.511
S	0.000	0.046	0.697	0.464	0.232	0.511	0.000	0.000	0.000	1.951
SSW	0.000	0.279	2.276	1.858	1.393	0.743	0.000	0.000	0.000	6.549
SW	0.000	0.139	2.137	1.486	0.604	0.093	0.000	0.000	0.000	4.459
WSW	0.000	0.139	0.743	0.232	0.139	0.046	0.000	0.000	0.000	1.301
W	0.000	0.186	0.418	0.093	0.046	0.093	0.000	0.000	0.000	0.836
WNW	0.000	0.046	0.139	0.325	0.139	0.046	0.000	0.000	0.000	0.697
NW	0.000	0.046	0.511	0.511	0.139	0.139	0.000	0.000	0.000	1.347
NNW	0.000	0.093	0.557	0.557	0.418	0.093	0.000	0.000	0.000	1.719
SUBTOTAL	0.000	2.740	13.562	8.453	4.412	2.183	0.000	0.000	0.000	31.352

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2153
TOTAL HOURS OF STABILITY CLASS E	675
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS E	675
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2153
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT
STABILITY BASED ON DELTA-T BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT 9.73 METER LEVEL

DATE PRINTED: 2019/05/15

MEAN WIND SPEED = 3.79

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS F (1.5< DELTA T<= 4.0 C/100 M)

SEQUOYAH NUCLEAR PLANT

JAN 1, 2019 - MAR 31, 2019

WIND DIRECTION	WIND SPEED(MPH) CALM	0.60-1.40	1.41-3.40	3.41-5.40	5.41-7.40	7.41-12.40	12.41-18.40	18.41-24.40	>=24.41	TOTAL
N	0.000	0.139	0.372	0.046	0.000	0.000	0.000	0.000	0.000	0.557
NNE	0.000	0.232	3.019	0.232	0.000	0.000	0.000	0.000	0.000	3.484
NE	0.000	0.650	0.975	0.000	0.000	0.000	0.000	0.000	0.000	1.626
ENE	0.000	0.093	0.139	0.000	0.000	0.000	0.000	0.000	0.000	0.232
E	0.000	0.186	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.232
ESE	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.046
SE	0.000	0.093	0.186	0.000	0.000	0.000	0.000	0.000	0.000	0.279
SSE	0.000	0.232	0.186	0.000	0.000	0.000	0.000	0.000	0.000	0.418
S	0.000	0.093	0.232	0.093	0.000	0.000	0.000	0.000	0.000	0.418
SSW	0.000	0.139	1.579	0.697	0.186	0.000	0.000	0.000	0.000	2.601
SW	0.000	0.000	0.975	0.325	0.046	0.046	0.000	0.000	0.000	1.393
WSW	0.000	0.139	0.325	0.046	0.000	0.000	0.000	0.000	0.000	0.511
W	0.000	0.139	0.093	0.000	0.046	0.000	0.000	0.000	0.000	0.279
WNW	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.046
NW	0.000	0.000	0.232	0.000	0.000	0.000	0.000	0.000	0.000	0.232
NNW	0.000	0.232	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.232
SUBTOTAL	0.000	2.415	8.360	1.486	0.279	0.046	0.000	0.000	0.000	12.587

TOTAL HOURS OF VALID STABILITY OBSERVATIONS 2153
TOTAL HOURS OF STABILITY CLASS F 271
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS F 271
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS 2153
TOTAL HOURS CALM 0

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT
STABILITY BASED ON DELTA-T BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT 9.73 METER LEVEL

DATE PRINTED: 2019/05/15

MEAN WIND SPEED = 2.33

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS G (DELTA T > 4.0 C/100 M)

SEQUOYAH NUCLEAR PLANT

JAN 1, 2019 - MAR 31, 2019

WIND DIRECTION	WIND SPEED(MPH) CALM	0.60-1.40	1.41-3.40	3.41-5.40	5.41-7.40	7.41-12.40	12.41-18.40	18.41-24.40	>=24.41	TOTAL
N	0.000	0.046	0.093	0.000	0.000	0.000	0.000	0.000	0.000	0.139
NNE	0.000	0.325	0.650	0.000	0.000	0.000	0.000	0.000	0.000	0.975
NE	0.000	0.232	0.836	0.000	0.000	0.000	0.000	0.000	0.000	1.068
ENE	0.000	0.046	0.139	0.000	0.000	0.000	0.000	0.000	0.000	0.186
E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ESE	0.000	0.093	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.093
SE	0.000	0.000	0.093	0.000	0.000	0.000	0.000	0.000	0.000	0.093
SSE	0.000	0.186	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.186
S	0.000	0.093	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.139
SSW	0.000	0.186	0.232	0.000	0.000	0.000	0.000	0.000	0.000	0.418
SW	0.000	0.093	0.325	0.000	0.000	0.000	0.000	0.000	0.000	0.418
WSW	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.046
W	0.000	0.093	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.093
WNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NW	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.046
NNW	0.000	0.046	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.093
SUBTOTAL	0.000	1.486	2.462	0.046	0.000	0.000	0.000	0.000	0.000	3.994

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2153
TOTAL HOURS OF STABILITY CLASS G	86
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS G	86
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2153
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT
STABILITY BASED ON DELTA-T BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT 9.73 METER LEVEL

DATE PRINTED: 2019/05/15

MEAN WIND SPEED = 1.69

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS A (DELTA T<=-1.9 C/100 M)

SEQUOYAH NUCLEAR PLANT

APR 1, 2019 - JUN 30, 2019

WIND DIRECTION	WIND SPEED(MPH) CALM	0.60-1.40	1.41-3.40	3.41-5.40	5.41-7.40	7.41-12.40	12.41-18.40	18.41-24.40	>=24.41	TOTAL
N	0.000	0.000	0.000	0.000	0.092	0.046	0.000	0.000	0.000	0.137
NNE	0.000	0.000	0.000	0.137	0.504	0.367	0.000	0.000	0.000	1.008
NE	0.000	0.000	0.000	0.321	0.137	0.000	0.000	0.000	0.000	0.458
ENE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
S	0.000	0.000	0.000	0.092	0.046	0.092	0.000	0.000	0.000	0.229
SSW	0.000	0.000	0.092	0.596	1.100	0.092	0.000	0.000	0.000	1.879
SW	0.000	0.000	0.046	0.687	0.092	0.000	0.000	0.000	0.000	0.825
WSW	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.046
W	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.046
WNW	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.046
NW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNW	0.000	0.000	0.000	0.000	0.092	0.000	0.000	0.000	0.000	0.092
SUBTOTAL	0.000	0.000	0.137	1.833	2.200	0.596	0.000	0.000	0.000	4.766

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2182
TOTAL HOURS OF STABILITY CLASS A	104
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS A	104
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2182
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT
STABILITY BASED ON DELTA-T BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT 9.73 METER LEVEL

DATE PRINTED: 2019/08/09

MEAN WIND SPEED = 5.80

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS B (-1.9< DELTA T<=-1.7 C/100 M)

SEQUOYAH NUCLEAR PLANT

APR 1, 2019 - JUN 30, 2019

WIND DIRECTION	WIND SPEED(MPH) CALM	0.60-1.40	1.41-3.40	3.41-5.40	5.41-7.40	7.41-12.40	12.41-18.40	18.41-24.40	>=24.41	TOTAL
N	0.000	0.000	0.000	0.000	0.275	0.046	0.000	0.000	0.000	0.321
NNE	0.000	0.000	0.046	0.229	0.092	0.137	0.000	0.000	0.000	0.504
NE	0.000	0.000	0.183	0.183	0.046	0.046	0.000	0.000	0.000	0.458
ENE	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.046
E	0.000	0.000	0.092	0.000	0.000	0.000	0.000	0.000	0.000	0.092
ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SE	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.046
SSE	0.000	0.000	0.000	0.046	0.092	0.046	0.000	0.000	0.000	0.183
S	0.000	0.000	0.000	0.229	0.092	0.229	0.000	0.000	0.000	0.550
SSW	0.000	0.000	0.092	1.054	0.779	0.137	0.000	0.000	0.000	2.062
SW	0.000	0.000	0.137	0.733	0.321	0.046	0.000	0.000	0.000	1.237
WSW	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.046
W	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.046
WNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NW	0.000	0.000	0.000	0.046	0.092	0.046	0.000	0.000	0.000	0.183
NNW	0.000	0.000	0.000	0.000	0.092	0.000	0.000	0.000	0.000	0.092
SUBTOTAL	0.000	0.000	0.550	2.704	1.879	0.733	0.000	0.000	0.000	5.866

TOTAL HOURS OF VALID STABILITY OBSERVATIONS 2182
TOTAL HOURS OF STABILITY CLASS B 128
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS B 128
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS 2182
TOTAL HOURS CALM 0

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT
STABILITY BASED ON DELTA-T BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT 9.73 METER LEVEL

DATE PRINTED: 2019/08/09

MEAN WIND SPEED = 5.49

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS C (-1.7< DELTA T<=-1.5 C/100 M)

SEQUOYAH NUCLEAR PLANT

APR 1, 2019 - JUN 30, 2019

WIND DIRECTION	WIND SPEED(MPH) CALM	0.60-1.40	1.41-3.40	3.41-5.40	5.41-7.40	7.41-12.40	12.41-18.40	18.41-24.40	>=24.41	TOTAL
N	0.000	0.000	0.000	0.046	0.046	0.000	0.000	0.000	0.000	0.092
NNE	0.000	0.000	0.183	0.321	0.000	0.137	0.000	0.000	0.000	0.642
NE	0.000	0.000	0.183	0.046	0.000	0.000	0.000	0.000	0.000	0.229
ENE	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.046
E	0.000	0.000	0.137	0.046	0.000	0.000	0.000	0.000	0.000	0.183
ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SE	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.046
SSE	0.000	0.000	0.092	0.000	0.046	0.046	0.000	0.000	0.000	0.183
S	0.000	0.000	0.137	0.367	0.000	0.137	0.000	0.000	0.000	0.642
SSW	0.000	0.000	0.229	1.375	0.550	0.275	0.000	0.000	0.000	2.429
SW	0.000	0.000	0.321	0.871	0.229	0.000	0.000	0.000	0.000	1.421
WSW	0.000	0.000	0.000	0.000	0.092	0.046	0.000	0.000	0.000	0.137
W	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NW	0.000	0.000	0.000	0.092	0.046	0.046	0.000	0.000	0.000	0.183
NNW	0.000	0.000	0.000	0.000	0.046	0.092	0.000	0.000	0.000	0.137
SUBTOTAL	0.000	0.000	1.329	3.208	1.054	0.779	0.000	0.000	0.000	6.370

TOTAL HOURS OF VALID STABILITY OBSERVATIONS 2182
TOTAL HOURS OF STABILITY CLASS C 139
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS C 139
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS 2182
TOTAL HOURS CALM 0

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT
STABILITY BASED ON DELTA-T BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT 9.73 METER LEVEL

DATE PRINTED: 2019/08/09

MEAN WIND SPEED = 4.93

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS D (-1.5< DELTA T<=-0.5 C/100 M)

SEQUOYAH NUCLEAR PLANT

APR 1, 2019 - JUN 30, 2019

WIND DIRECTION	WIND SPEED(MPH) CALM	0.60-1.40	1.41-3.40	3.41-5.40	5.41-7.40	7.41-12.40	12.41-18.40	18.41-24.40	>=24.41	TOTAL
N	0.000	0.000	0.642	0.367	0.321	0.046	0.000	0.000	0.000	1.375
NNE	0.000	0.046	1.696	0.733	0.642	0.458	0.000	0.000	0.000	3.575
NE	0.000	0.092	1.008	0.321	0.000	0.000	0.000	0.000	0.000	1.421
ENE	0.000	0.046	0.504	0.000	0.000	0.000	0.000	0.000	0.000	0.550
E	0.000	0.046	0.183	0.000	0.000	0.000	0.000	0.000	0.000	0.229
ESE	0.000	0.000	0.183	0.000	0.000	0.000	0.000	0.000	0.000	0.183
SE	0.000	0.000	0.367	0.046	0.000	0.000	0.000	0.000	0.000	0.412
SSE	0.000	0.000	0.596	0.367	0.046	0.000	0.000	0.000	0.000	1.008
S	0.000	0.092	1.100	1.787	0.596	0.550	0.000	0.000	0.000	4.125
SSW	0.000	0.137	2.979	3.896	1.054	0.229	0.000	0.000	0.000	8.295
SW	0.000	0.046	1.146	1.283	1.375	0.229	0.046	0.000	0.000	4.125
WSW	0.000	0.000	0.321	0.458	0.183	0.137	0.000	0.000	0.000	1.100
W	0.000	0.000	0.183	0.412	0.321	0.000	0.000	0.000	0.000	0.917
WNW	0.000	0.000	0.137	0.137	0.321	0.183	0.000	0.000	0.000	0.779
NW	0.000	0.046	0.092	0.412	0.183	0.092	0.000	0.000	0.000	0.825
NNW	0.000	0.000	0.229	0.321	0.367	0.137	0.000	0.000	0.000	1.054
SUBTOTAL	0.000	0.550	11.366	10.541	5.408	2.062	0.046	0.000	0.000	29.973

TOTAL HOURS OF VALID STABILITY OBSERVATIONS 2182
TOTAL HOURS OF STABILITY CLASS D 654
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS D 654
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS 2182
TOTAL HOURS CALM 0

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT
STABILITY BASED ON DELTA-T BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT 9.73 METER LEVEL

DATE PRINTED: 2019/08/09

MEAN WIND SPEED = 4.34

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS E (-0.5< DELTA T<= 1.5 C/100 M)

SEQUOYAH NUCLEAR PLANT

APR 1, 2019 - JUN 30, 2019

WIND DIRECTION	WIND SPEED(MPH) CALM	0.60-1.40	1.41-3.40	3.41-5.40	5.41-7.40	7.41-12.40	12.41-18.40	18.41-24.40	>=24.41	TOTAL
N	0.000	0.504	2.016	0.458	0.275	0.000	0.000	0.000	0.000	3.254
NNE	0.000	0.642	3.162	1.100	0.092	0.000	0.000	0.000	0.000	4.995
NE	0.000	0.275	0.504	0.092	0.000	0.000	0.000	0.000	0.000	0.871
ENE	0.000	0.229	0.229	0.000	0.000	0.000	0.000	0.000	0.000	0.458
E	0.000	0.046	0.183	0.000	0.000	0.000	0.000	0.000	0.000	0.229
ESE	0.000	0.183	0.229	0.000	0.000	0.000	0.000	0.000	0.000	0.412
SE	0.000	0.229	0.092	0.000	0.000	0.000	0.000	0.000	0.000	0.321
SSE	0.000	0.275	0.779	0.412	0.092	0.092	0.000	0.000	0.000	1.650
S	0.000	0.550	1.146	0.779	0.504	0.642	0.000	0.000	0.000	3.621
SSW	0.000	0.458	3.941	1.467	0.321	0.046	0.000	0.000	0.000	6.233
SW	0.000	0.275	4.262	1.696	0.229	0.046	0.000	0.000	0.000	6.508
WSW	0.000	0.229	1.054	0.229	0.137	0.000	0.000	0.000	0.000	1.650
W	0.000	0.183	0.412	0.092	0.046	0.000	0.000	0.000	0.000	0.733
WNW	0.000	0.046	0.596	0.275	0.046	0.000	0.000	0.000	0.000	0.962
NW	0.000	0.046	0.825	0.183	0.046	0.000	0.000	0.000	0.000	1.100
NNW	0.000	0.275	0.733	0.550	0.000	0.000	0.000	0.000	0.000	1.558
SUBTOTAL	0.000	4.445	20.165	7.333	1.787	0.825	0.000	0.000	0.000	34.555

TOTAL HOURS OF VALID STABILITY OBSERVATIONS 2182
TOTAL HOURS OF STABILITY CLASS E 754
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS E 754
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS 2182
TOTAL HOURS CALM 0

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT
STABILITY BASED ON DELTA-T BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT 9.73 METER LEVEL

DATE PRINTED: 2019/08/09

MEAN WIND SPEED = 2.98

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS F (1.5< DELTA T<= 4.0 C/100 M)

SEQUOYAH NUCLEAR PLANT

APR 1, 2019 - JUN 30, 2019

WIND DIRECTION	WIND SPEED(MPH) CALM	0.60-1.40	1.41-3.40	3.41-5.40	5.41-7.40	7.41-12.40	12.41-18.40	18.41-24.40	>=24.41	TOTAL
N	0.000	0.367	1.696	0.137	0.000	0.000	0.000	0.000	0.000	2.200
NNE	0.000	0.962	2.475	0.000	0.000	0.000	0.000	0.000	0.000	3.437
NE	0.000	0.458	0.321	0.000	0.000	0.000	0.000	0.000	0.000	0.779
ENE	0.000	0.275	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.275
E	0.000	0.183	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.183
ESE	0.000	0.046	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.092
SE	0.000	0.458	0.092	0.000	0.000	0.000	0.000	0.000	0.000	0.550
SSE	0.000	0.504	0.137	0.000	0.000	0.000	0.000	0.000	0.000	0.642
S	0.000	0.687	0.550	0.000	0.000	0.000	0.000	0.000	0.000	1.237
SSW	0.000	0.321	1.421	0.092	0.000	0.000	0.000	0.000	0.000	1.833
SW	0.000	0.092	0.917	0.000	0.000	0.000	0.000	0.000	0.000	1.008
WSW	0.000	0.092	0.367	0.046	0.000	0.000	0.000	0.000	0.000	0.504
W	0.000	0.000	0.137	0.000	0.000	0.000	0.000	0.000	0.000	0.137
WNW	0.000	0.046	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.092
NW	0.000	0.092	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.137
NNW	0.000	0.092	0.367	0.000	0.046	0.000	0.000	0.000	0.000	0.504
SUBTOTAL	0.000	4.675	8.616	0.275	0.046	0.000	0.000	0.000	0.000	13.611

TOTAL HOURS OF VALID STABILITY OBSERVATIONS 2182
TOTAL HOURS OF STABILITY CLASS F 297
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS F 297
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS 2182
TOTAL HOURS CALM 0

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT
STABILITY BASED ON DELTA-T BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT 9.73 METER LEVEL

DATE PRINTED: 2019/08/09

MEAN WIND SPEED = 1.83

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS G (DELTA T > 4.0 C/100 M)

SEQUOYAH NUCLEAR PLANT

APR 1, 2019 - JUN 30, 2019

WIND DIRECTION	WIND SPEED(MPH) CALM	0.60-1.40	1.41-3.40	3.41-5.40	5.41-7.40	7.41-12.40	12.41-18.40	18.41-24.40	>=24.41	TOTAL
N	0.000	0.092	0.137	0.000	0.000	0.000	0.000	0.000	0.000	0.229
NNE	0.000	0.183	0.871	0.046	0.000	0.000	0.000	0.000	0.000	1.100
NE	0.000	0.183	0.321	0.000	0.000	0.000	0.000	0.000	0.000	0.504
ENE	0.000	0.229	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.275
E	0.000	0.137	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.137
ESE	0.000	0.046	0.092	0.000	0.000	0.000	0.000	0.000	0.000	0.137
SE	0.000	0.137	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.137
SSE	0.000	0.504	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.504
S	0.000	0.183	0.367	0.000	0.000	0.000	0.000	0.000	0.000	0.550
SSW	0.000	0.137	0.642	0.000	0.000	0.000	0.000	0.000	0.000	0.779
SW	0.000	0.000	0.504	0.000	0.000	0.000	0.000	0.000	0.000	0.504
WSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
W	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SUBTOTAL	0.000	1.833	2.979	0.046	0.000	0.000	0.000	0.000	0.000	4.858

TOTAL HOURS OF VALID STABILITY OBSERVATIONS 2182
TOTAL HOURS OF STABILITY CLASS G 106
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS G 106
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS 2182
TOTAL HOURS CALM 0

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT
STABILITY BASED ON DELTA-T BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT 9.73 METER LEVEL

DATE PRINTED: 2019/08/09

MEAN WIND SPEED = 1.69

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS A (DELTA T<=-1.9 C/100 M)

SEQUOYAH NUCLEAR PLANT STA 57 A - Validated Edited Data

JUL 1, 2019 - SEP 30, 2019

WIND DIRECTION	WIND SPEED(MPH) CALM	0.60-1.40	1.41-3.40	3.41-5.40	5.41-7.40	7.41-12.40	12.41-18.40	18.41-24.40	>=24.41	TOTAL
N	0.000	0.000	0.000	0.182	0.454	0.136	0.000	0.000	0.000	0.772
NNE	0.000	0.000	0.000	1.817	0.727	0.045	0.000	0.000	0.000	2.590
NE	0.000	0.000	0.182	1.318	0.136	0.000	0.000	0.000	0.000	1.636
ENE	0.000	0.000	0.182	0.227	0.000	0.000	0.000	0.000	0.000	0.409
E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SE	0.000	0.000	0.045	0.273	0.000	0.000	0.000	0.000	0.000	0.318
SSE	0.000	0.000	0.000	0.091	0.045	0.000	0.000	0.000	0.000	0.136
S	0.000	0.000	0.000	0.182	0.409	0.136	0.000	0.000	0.000	0.727
SSW	0.000	0.000	0.091	1.363	1.090	0.045	0.000	0.000	0.000	2.590
SW	0.000	0.000	0.045	1.408	0.636	0.000	0.000	0.000	0.000	2.090
WSW	0.000	0.000	0.000	0.227	0.045	0.000	0.000	0.000	0.000	0.273
W	0.000	0.000	0.045	0.000	0.000	0.000	0.000	0.000	0.000	0.045
WNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NW	0.000	0.000	0.000	0.045	0.045	0.000	0.000	0.000	0.000	0.091
NNW	0.000	0.000	0.000	0.182	0.045	0.000	0.000	0.000	0.000	0.227
SUBTOTAL	0.000	0.000	0.591	7.315	3.635	0.363	0.000	0.000	0.000	11.904

TOTAL HOURS OF VALID STABILITY OBSERVATIONS 2201
TOTAL HOURS OF STABILITY CLASS A 262
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS A 262
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS 2201
TOTAL HOURS CALM 0

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT STA 57 A - Validated Edited Data
STABILITY BASED ON DELTA-T BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT 9.73 METER LEVEL

DATE PRINTED: 2019/10/29

MEAN WIND SPEED = 5.09

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS B (-1.9< DELTA T<=-1.7 C/100 M)

SEQUOYAH NUCLEAR PLANT STA 57 A - Validated Edited Data

JUL 1, 2019 - SEP 30, 2019

WIND DIRECTION	WIND SPEED(MPH) CALM	0.60-1.40	1.41-3.40	3.41-5.40	5.41-7.40	7.41-12.40	12.41-18.40	18.41-24.40	>=24.41	TOTAL
N	0.000	0.000	0.045	0.091	0.136	0.045	0.000	0.000	0.000	0.318
NNE	0.000	0.000	0.182	0.727	0.091	0.091	0.000	0.000	0.000	1.090
NE	0.000	0.000	0.772	0.318	0.000	0.000	0.000	0.000	0.000	1.090
ENE	0.000	0.000	0.091	0.045	0.000	0.000	0.000	0.000	0.000	0.136
E	0.000	0.000	0.136	0.000	0.000	0.000	0.000	0.000	0.000	0.136
ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SE	0.000	0.000	0.000	0.091	0.000	0.000	0.000	0.000	0.000	0.091
SSE	0.000	0.000	0.045	0.091	0.000	0.000	0.000	0.000	0.000	0.136
S	0.000	0.000	0.000	0.682	0.136	0.000	0.000	0.000	0.000	0.818
SSW	0.000	0.000	0.182	1.590	0.545	0.000	0.000	0.000	0.000	2.317
SW	0.000	0.000	0.136	0.318	0.045	0.000	0.000	0.000	0.000	0.500
WSW	0.000	0.000	0.000	0.045	0.000	0.000	0.000	0.000	0.000	0.045
W	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WNW	0.000	0.000	0.045	0.000	0.000	0.000	0.000	0.000	0.000	0.045
NW	0.000	0.000	0.000	0.091	0.000	0.000	0.000	0.000	0.000	0.091
NNW	0.000	0.000	0.000	0.000	0.091	0.000	0.000	0.000	0.000	0.091
SUBTOTAL	0.000	0.000	1.636	4.089	1.045	0.136	0.000	0.000	0.000	6.906

TOTAL HOURS OF VALID STABILITY OBSERVATIONS 2201
TOTAL HOURS OF STABILITY CLASS B 152
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS B 152
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS 2201
TOTAL HOURS CALM 0

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT STA 57 A - Validated Edited Data
STABILITY BASED ON DELTA-T BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT 9.73 METER LEVEL

DATE PRINTED: 2019/10/29

MEAN WIND SPEED = 4.36

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS C (-1.7< DELTA T<=-1.5 C/100 M)

SEQUOYAH NUCLEAR PLANT STA 57 A - Validated Edited Data

JUL 1, 2019 - SEP 30, 2019

WIND DIRECTION	WIND SPEED(MPH) CALM	0.60-1.40	1.41-3.40	3.41-5.40	5.41-7.40	7.41-12.40	12.41-18.40	18.41-24.40	>=24.41	TOTAL
N	0.000	0.000	0.000	0.182	0.136	0.000	0.000	0.000	0.000	0.318
NNE	0.000	0.000	0.182	0.454	0.045	0.136	0.000	0.000	0.000	0.818
NE	0.000	0.000	0.500	0.227	0.000	0.000	0.000	0.000	0.000	0.727
ENE	0.000	0.000	0.227	0.000	0.000	0.000	0.000	0.000	0.000	0.227
E	0.000	0.000	0.227	0.045	0.000	0.000	0.000	0.000	0.000	0.273
ESE	0.000	0.000	0.227	0.000	0.000	0.000	0.000	0.000	0.000	0.227
SE	0.000	0.000	0.091	0.000	0.000	0.000	0.000	0.000	0.000	0.091
SSE	0.000	0.000	0.091	0.091	0.000	0.000	0.000	0.000	0.000	0.182
S	0.000	0.000	0.454	0.500	0.000	0.000	0.000	0.000	0.000	0.954
SSW	0.000	0.000	0.682	1.454	0.136	0.000	0.000	0.000	0.000	2.272
SW	0.000	0.000	0.182	0.182	0.000	0.000	0.000	0.000	0.000	0.363
WSW	0.000	0.000	0.000	0.136	0.000	0.000	0.000	0.000	0.000	0.136
W	0.000	0.000	0.045	0.000	0.000	0.000	0.000	0.000	0.000	0.045
WNW	0.000	0.000	0.000	0.091	0.000	0.000	0.000	0.000	0.000	0.091
NW	0.000	0.000	0.045	0.045	0.045	0.045	0.000	0.000	0.000	0.182
NNW	0.000	0.000	0.045	0.045	0.091	0.000	0.000	0.000	0.000	0.182
SUBTOTAL	0.000	0.000	2.999	3.453	0.454	0.182	0.000	0.000	0.000	7.088

TOTAL HOURS OF VALID STABILITY OBSERVATIONS 2201
TOTAL HOURS OF STABILITY CLASS C 156
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS C 156
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS 2201
TOTAL HOURS CALM 0

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT STA 57 A - Validated Edited Data
STABILITY BASED ON DELTA-T BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT 9.73 METER LEVEL

DATE PRINTED: 2019/10/29

MEAN WIND SPEED = 3.88

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS D (-1.5< DELTA T<=-0.5 C/100 M)

SEQUOYAH NUCLEAR PLANT STA 57 A - Validated Edited Data

JUL 1, 2019 - SEP 30, 2019

WIND DIRECTION	WIND SPEED(MPH) CALM	0.60-1.40	1.41-3.40	3.41-5.40	5.41-7.40	7.41-12.40	12.41-18.40	18.41-24.40	>=24.41	TOTAL
N	0.000	0.091	1.590	0.727	0.500	0.091	0.000	0.000	0.000	2.999
NNE	0.000	0.182	2.090	1.545	0.409	0.000	0.000	0.000	0.000	4.225
NE	0.000	0.000	0.863	0.227	0.000	0.000	0.000	0.000	0.000	1.090
ENE	0.000	0.091	0.318	0.000	0.000	0.000	0.000	0.000	0.000	0.409
E	0.000	0.000	0.091	0.045	0.000	0.000	0.000	0.000	0.000	0.136
ESE	0.000	0.091	0.318	0.091	0.000	0.000	0.000	0.000	0.000	0.500
SE	0.000	0.045	0.363	0.091	0.000	0.000	0.000	0.000	0.000	0.500
SSE	0.000	0.136	0.636	0.227	0.000	0.000	0.000	0.000	0.000	1.000
S	0.000	0.000	2.135	1.136	0.454	0.000	0.000	0.000	0.000	3.726
SSW	0.000	0.091	2.681	2.953	0.363	0.045	0.000	0.000	0.000	6.134
SW	0.000	0.045	1.045	1.045	0.136	0.000	0.000	0.000	0.000	2.272
WSW	0.000	0.000	0.273	0.273	0.045	0.000	0.000	0.000	0.000	0.591
W	0.000	0.045	0.273	0.227	0.000	0.000	0.000	0.000	0.000	0.545
WNW	0.000	0.000	0.136	0.227	0.000	0.000	0.000	0.000	0.000	0.363
NW	0.000	0.136	0.182	0.182	0.000	0.000	0.000	0.000	0.000	0.500
NNW	0.000	0.000	0.091	0.227	0.091	0.000	0.000	0.000	0.000	0.409
SUBTOTAL	0.000	0.954	13.085	9.223	1.999	0.136	0.000	0.000	0.000	25.398

TOTAL HOURS OF VALID STABILITY OBSERVATIONS 2201
TOTAL HOURS OF STABILITY CLASS D 559
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS D 559
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS 2201
TOTAL HOURS CALM 0

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT STA 57 A - Validated Edited Data
STABILITY BASED ON DELTA-T BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT 9.73 METER LEVEL

DATE PRINTED: 2019/10/29

MEAN WIND SPEED = 3.40

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS E (-0.5< DELTA T<= 1.5 C/100 M)

SEQUOYAH NUCLEAR PLANT STA 57 A - Validated Edited Data

JUL 1, 2019 - SEP 30, 2019

WIND DIRECTION	WIND SPEED(MPH) CALM	0.60-1.40	1.41-3.40	3.41-5.40	5.41-7.40	7.41-12.40	12.41-18.40	18.41-24.40	>=24.41	TOTAL
N	0.000	0.954	5.588	0.636	0.091	0.000	0.000	0.000	0.000	7.269
NNE	0.000	1.272	3.907	0.500	0.000	0.045	0.000	0.000	0.000	5.725
NE	0.000	0.363	0.273	0.000	0.000	0.000	0.000	0.000	0.000	0.636
ENE	0.000	0.091	0.045	0.000	0.000	0.000	0.000	0.000	0.000	0.136
E	0.000	0.091	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.091
ESE	0.000	0.227	0.182	0.000	0.000	0.000	0.000	0.000	0.000	0.409
SE	0.000	0.091	0.136	0.000	0.000	0.000	0.000	0.000	0.000	0.227
SSE	0.000	0.091	0.682	0.045	0.000	0.000	0.000	0.000	0.000	0.818
S	0.000	0.500	1.499	0.045	0.000	0.000	0.000	0.000	0.000	2.045
SSW	0.000	0.363	2.363	0.182	0.000	0.000	0.000	0.000	0.000	2.908
SW	0.000	0.318	2.635	0.818	0.000	0.000	0.000	0.000	0.000	3.771
WSW	0.000	0.318	1.545	0.136	0.000	0.000	0.000	0.000	0.000	1.999
W	0.000	0.318	0.363	0.045	0.000	0.000	0.000	0.000	0.000	0.727
WNW	0.000	0.136	0.545	0.000	0.000	0.000	0.000	0.000	0.000	0.682
NW	0.000	0.136	0.682	0.045	0.000	0.000	0.000	0.000	0.000	0.863
NNW	0.000	0.500	2.317	0.545	0.000	0.000	0.000	0.000	0.000	3.362
SUBTOTAL	0.000	5.770	22.762	2.999	0.091	0.045	0.000	0.000	0.000	31.667

TOTAL HOURS OF VALID STABILITY OBSERVATIONS 2201
TOTAL HOURS OF STABILITY CLASS E 697
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS E 697
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS 2201
TOTAL HOURS CALM 0

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT STA 57 A - Validated Edited Data
STABILITY BASED ON DELTA-T BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT 9.73 METER LEVEL

DATE PRINTED: 2019/10/29

MEAN WIND SPEED = 2.18

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS F (1.5< DELTA T<= 4.0 C/100 M)

SEQUOYAH NUCLEAR PLANT STA 57 A - Validated Edited Data

JUL 1, 2019 - SEP 30, 2019

WIND DIRECTION	WIND SPEED(MPH) CALM	0.60-1.40	1.41-3.40	3.41-5.40	5.41-7.40	7.41-12.40	12.41-18.40	18.41-24.40	>=24.41	TOTAL
N	0.000	0.409	3.862	0.045	0.000	0.000	0.000	0.000	0.000	4.316
NNE	0.000	1.636	5.679	0.000	0.000	0.000	0.000	0.000	0.000	7.315
NE	0.000	0.591	0.227	0.000	0.000	0.000	0.000	0.000	0.000	0.818
ENE	0.000	0.318	0.045	0.000	0.000	0.000	0.000	0.000	0.000	0.363
E	0.000	0.227	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.227
ESE	0.000	0.227	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.227
SE	0.000	0.227	0.091	0.000	0.000	0.000	0.000	0.000	0.000	0.318
SSE	0.000	0.273	0.136	0.000	0.000	0.000	0.000	0.000	0.000	0.409
S	0.000	0.136	0.273	0.045	0.000	0.000	0.000	0.000	0.000	0.454
SSW	0.000	0.227	0.227	0.000	0.000	0.000	0.000	0.000	0.000	0.454
SW	0.000	0.182	0.227	0.000	0.000	0.000	0.000	0.000	0.000	0.409
WSW	0.000	0.000	0.136	0.000	0.000	0.000	0.000	0.000	0.000	0.136
W	0.000	0.000	0.091	0.000	0.000	0.000	0.000	0.000	0.000	0.091
WNW	0.000	0.000	0.045	0.000	0.000	0.000	0.000	0.000	0.000	0.045
NW	0.000	0.000	0.136	0.000	0.000	0.000	0.000	0.000	0.000	0.136
NNW	0.000	0.136	0.591	0.000	0.000	0.000	0.000	0.000	0.000	0.727
SUBTOTAL	0.000	4.589	11.767	0.091	0.000	0.000	0.000	0.000	0.000	16.447

TOTAL HOURS OF VALID STABILITY OBSERVATIONS 2201
TOTAL HOURS OF STABILITY CLASS F 362
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS F 362
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS 2201
TOTAL HOURS CALM 0

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT STA 57 A - Validated Edited Data
STABILITY BASED ON DELTA-T BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT 9.73 METER LEVEL

DATE PRINTED: 2019/10/29

MEAN WIND SPEED = 1.77

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS G (DELTA T > 4.0 C/100 M)

SEQUOYAH NUCLEAR PLANT STA 57 A - Validated Edited Data

JUL 1, 2019 - SEP 30, 2019

WIND DIRECTION	WIND SPEED(MPH) CALM	0.60-1.40	1.41-3.40	3.41-5.40	5.41-7.40	7.41-12.40	12.41-18.40	18.41-24.40	>=24.41	TOTAL
N	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNE	0.000	0.045	0.136	0.000	0.000	0.000	0.000	0.000	0.000	0.182
NE	0.000	0.000	0.091	0.000	0.000	0.000	0.000	0.000	0.000	0.091
ENE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SE	0.000	0.045	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.045
SSE	0.000	0.182	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.182
S	0.000	0.000	0.091	0.000	0.000	0.000	0.000	0.000	0.000	0.091
SSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
W	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SUBTOTAL	0.000	0.273	0.318	0.000	0.000	0.000	0.000	0.000	0.000	0.591

TOTAL HOURS OF VALID STABILITY OBSERVATIONS 2201
TOTAL HOURS OF STABILITY CLASS G 13
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS G 13
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS 2201
TOTAL HOURS CALM 0

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT STA 57 A - Validated Edited Data
STABILITY BASED ON DELTA-T BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT 9.73 METER LEVEL

DATE PRINTED: 2019/10/29

MEAN WIND SPEED = 1.48

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS A (DELTA T<=-1.9 C/100 M)

SEQUOYAH NUCLEAR PLANT

OCT 1, 2019 - DEC 31, 2019

WIND DIRECTION	WIND SPEED(MPH) CALM	0.60-1.40	1.41-3.40	3.41-5.40	5.41-7.40	7.41-12.40	12.41-18.40	18.41-24.40	>=24.41	TOTAL
N	0.000	0.000	0.000	0.230	0.046	0.000	0.000	0.000	0.000	0.276
NNE	0.000	0.000	0.046	0.506	0.506	0.414	0.000	0.000	0.000	1.471
NE	0.000	0.000	0.184	0.414	0.230	0.046	0.000	0.000	0.000	0.874
ENE	0.000	0.000	0.000	0.322	0.000	0.000	0.000	0.000	0.000	0.322
E	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
ESE	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.046
SE	0.000	0.000	0.000	0.092	0.000	0.000	0.000	0.000	0.000	0.092
SSE	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.046
S	0.000	0.000	0.000	0.046	0.046	0.184	0.000	0.000	0.000	0.276
SSW	0.000	0.000	0.000	0.230	0.322	0.092	0.000	0.000	0.000	0.644
SW	0.000	0.000	0.000	0.414	0.276	0.138	0.000	0.000	0.000	0.828
WSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
W	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNW	0.000	0.000	0.000	0.000	0.046	0.046	0.000	0.000	0.000	0.092
SUBTOTAL	0.000	0.000	0.230	2.345	1.471	0.920	0.000	0.000	0.000	4.966

TOTAL HOURS OF VALID STABILITY OBSERVATIONS 2189
TOTAL HOURS OF STABILITY CLASS A 108
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS A 108
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS 2175
TOTAL HOURS CALM 0

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT
STABILITY BASED ON DELTA-T BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT 9.73 METER LEVEL

DATE PRINTED: 2020/01/23

MEAN WIND SPEED = 5.74

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS B (-1.9< DELTA T<=-1.7 C/100 M)

SEQUOYAH NUCLEAR PLANT

OCT 1, 2019 - DEC 31, 2019

WIND DIRECTION	WIND SPEED(MPH) CALM	0.60-1.40	1.41-3.40	3.41-5.40	5.41-7.40	7.41-12.40	12.41-18.40	18.41-24.40	>=24.41	TOTAL
N	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.046
NNE	0.000	0.000	0.138	0.046	0.460	0.230	0.000	0.000	0.000	0.874
NE	0.000	0.000	0.230	0.368	0.046	0.046	0.000	0.000	0.000	0.690
ENE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
E	0.000	0.000	0.092	0.046	0.000	0.000	0.000	0.000	0.000	0.138
ESE	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.046
SE	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.046
SSE	0.000	0.000	0.000	0.092	0.000	0.000	0.000	0.000	0.000	0.092
S	0.000	0.000	0.000	0.092	0.046	0.046	0.000	0.000	0.000	0.184
SSW	0.000	0.000	0.046	0.184	0.322	0.046	0.000	0.000	0.000	0.598
SW	0.000	0.000	0.000	0.230	0.092	0.276	0.000	0.000	0.000	0.598
WSW	0.000	0.000	0.000	0.046	0.046	0.092	0.000	0.000	0.000	0.184
W	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
WNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNW	0.000	0.000	0.000	0.000	0.046	0.092	0.000	0.000	0.000	0.138
SUBTOTAL	0.000	0.000	0.506	1.195	1.103	0.828	0.000	0.000	0.000	3.632

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2189
TOTAL HOURS OF STABILITY CLASS B	79
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS B	79
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2175
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT
STABILITY BASED ON DELTA-T BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT 9.73 METER LEVEL

DATE PRINTED: 2020/01/23

MEAN WIND SPEED = 5.77

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS C (-1.7< DELTA T<=-1.5 C/100 M)

SEQUOYAH NUCLEAR PLANT

OCT 1, 2019 - DEC 31, 2019

WIND DIRECTION	WIND SPEED(MPH) CALM	0.60-1.40	1.41-3.40	3.41-5.40	5.41-7.40	7.41-12.40	12.41-18.40	18.41-24.40	>=24.41	TOTAL
N	0.000	0.000	0.000	0.092	0.092	0.138	0.000	0.000	0.000	0.322
NNE	0.000	0.000	0.368	0.460	0.184	0.230	0.000	0.000	0.000	1.241
NE	0.000	0.000	0.046	0.230	0.092	0.046	0.000	0.000	0.000	0.414
ENE	0.000	0.000	0.138	0.000	0.000	0.000	0.000	0.000	0.000	0.138
E	0.000	0.000	0.092	0.000	0.000	0.000	0.000	0.000	0.000	0.092
ESE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SE	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
SSE	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.046
S	0.000	0.000	0.000	0.322	0.000	0.000	0.000	0.000	0.000	0.322
SSW	0.000	0.000	0.000	0.460	0.276	0.000	0.000	0.000	0.000	0.736
SW	0.000	0.000	0.138	0.598	0.000	0.046	0.000	0.000	0.000	0.782
WSW	0.000	0.000	0.046	0.000	0.000	0.046	0.000	0.000	0.000	0.092
W	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.046
WNW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NW	0.000	0.000	0.000	0.000	0.000	0.046	0.000	0.000	0.000	0.046
NNW	0.000	0.000	0.000	0.000	0.138	0.230	0.000	0.000	0.000	0.368
SUBTOTAL	0.000	0.000	0.828	2.253	0.782	0.782	0.000	0.000	0.000	4.644

TOTAL HOURS OF VALID STABILITY OBSERVATIONS 2189
TOTAL HOURS OF STABILITY CLASS C 102
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS C 101
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS 2175
TOTAL HOURS CALM 0

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT
STABILITY BASED ON DELTA-T BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT 9.73 METER LEVEL

DATE PRINTED: 2020/01/23

MEAN WIND SPEED = 5.13

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS D (-1.5< DELTA T<=-0.5 C/100 M)

SEQUOYAH NUCLEAR PLANT

OCT 1, 2019 - DEC 31, 2019

WIND DIRECTION	WIND SPEED(MPH) CALM	0.60-1.40	1.41-3.40	3.41-5.40	5.41-7.40	7.41-12.40	12.41-18.40	18.41-24.40	>=24.41	TOTAL
N	0.000	0.092	1.195	1.333	1.747	1.195	0.000	0.000	0.000	5.563
NNE	0.000	0.000	1.839	2.345	2.897	1.563	0.000	0.000	0.000	8.644
NE	0.000	0.138	1.103	0.322	0.230	0.000	0.000	0.000	0.000	1.793
ENE	0.000	0.092	0.276	0.046	0.000	0.000	0.000	0.000	0.000	0.414
E	0.000	0.000	0.276	0.000	0.000	0.000	0.000	0.000	0.000	0.276
ESE	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.046
SE	0.000	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.046
SSE	0.000	0.000	0.276	0.046	0.000	0.184	0.000	0.000	0.000	0.506
S	0.000	0.000	0.782	0.690	0.414	0.414	0.046	0.000	0.000	2.345
SSW	0.000	0.138	1.701	1.885	1.011	0.368	0.000	0.000	0.000	5.103
SW	0.000	0.046	0.920	0.920	0.184	0.230	0.000	0.000	0.000	2.299
WSW	0.000	0.046	0.552	0.230	0.276	0.046	0.000	0.000	0.000	1.149
W	0.000	0.046	0.138	0.230	0.552	0.368	0.046	0.000	0.000	1.379
WNW	0.000	0.000	0.230	0.184	0.276	0.552	0.000	0.000	0.000	1.241
NW	0.000	0.046	0.368	0.322	0.460	0.322	0.000	0.000	0.000	1.517
NNW	0.000	0.046	0.184	0.736	0.598	0.460	0.000	0.000	0.000	2.023
SUBTOTAL	0.000	0.690	9.931	9.287	8.644	5.701	0.092	0.000	0.000	34.345

TOTAL HOURS OF VALID STABILITY OBSERVATIONS 2189
TOTAL HOURS OF STABILITY CLASS D 748
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS D 747
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS 2175
TOTAL HOURS CALM 0

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT
STABILITY BASED ON DELTA-T BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT 9.73 METER LEVEL

DATE PRINTED: 2020/01/23

MEAN WIND SPEED = 5.01

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS E (-0.5< DELTA T<= 1.5 C/100 M)

SEQUOYAH NUCLEAR PLANT

OCT 1, 2019 - DEC 31, 2019

WIND DIRECTION	WIND SPEED(MPH) CALM	0.60-1.40	1.41-3.40	3.41-5.40	5.41-7.40	7.41-12.40	12.41-18.40	18.41-24.40	>=24.41	TOTAL
N	0.000	0.414	2.483	1.839	0.184	0.000	0.000	0.000	0.000	4.920
NNE	0.000	0.506	3.034	1.839	0.644	0.690	0.000	0.000	0.000	6.713
NE	0.000	0.368	0.552	0.092	0.046	0.000	0.000	0.000	0.000	1.057
ENE	0.000	0.184	0.368	0.000	0.000	0.000	0.000	0.000	0.000	0.552
E	0.000	0.138	0.092	0.000	0.000	0.000	0.000	0.000	0.000	0.230
ESE	0.000	0.184	0.092	0.000	0.000	0.000	0.000	0.000	0.000	0.276
SE	0.000	0.092	0.230	0.000	0.000	0.000	0.000	0.000	0.000	0.322
SSE	0.000	0.184	0.276	0.092	0.000	0.092	0.000	0.000	0.000	0.644
S	0.000	0.138	1.149	0.552	0.644	0.736	0.000	0.000	0.000	3.218
SSW	0.000	0.368	2.713	1.379	0.322	0.046	0.046	0.000	0.000	4.874
SW	0.000	0.276	2.805	0.966	0.092	0.000	0.000	0.000	0.000	4.138
WSW	0.000	0.184	0.782	0.644	0.276	0.138	0.000	0.000	0.000	2.023
W	0.000	0.184	0.184	0.276	0.184	0.092	0.000	0.000	0.000	0.920
WNW	0.000	0.092	0.322	0.276	0.092	0.046	0.000	0.000	0.000	0.828
NW	0.000	0.138	0.138	0.414	0.046	0.046	0.000	0.000	0.000	0.782
NNW	0.000	0.276	1.011	0.414	0.092	0.000	0.000	0.000	0.000	1.793
SUBTOTAL	0.000	3.724	16.230	8.782	2.621	1.885	0.046	0.000	0.000	33.287

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2189
TOTAL HOURS OF STABILITY CLASS E	725
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS E	724
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2175
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT
STABILITY BASED ON DELTA-T BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT 9.73 METER LEVEL

DATE PRINTED: 2020/01/23

MEAN WIND SPEED = 3.43

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS F (1.5< DELTA T<= 4.0 C/100 M)

SEQUOYAH NUCLEAR PLANT

OCT 1, 2019 - DEC 31, 2019

WIND DIRECTION	WIND SPEED(MPH) CALM	0.60-1.40	1.41-3.40	3.41-5.40	5.41-7.40	7.41-12.40	12.41-18.40	18.41-24.40	>=24.41	TOTAL
N	0.010	0.552	2.621	0.184	0.000	0.000	0.000	0.000	0.000	3.366
NNE	0.018	0.920	4.828	0.276	0.000	0.000	0.000	0.000	0.000	6.041
NE	0.005	0.644	0.920	0.092	0.000	0.000	0.000	0.000	0.000	1.660
ENE	0.001	0.184	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.231
E	0.000	0.046	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.092
ESE	0.001	0.230	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.231
SE	0.000	0.092	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.092
SSE	0.001	0.184	0.092	0.000	0.000	0.000	0.000	0.000	0.000	0.277
S	0.002	0.414	0.368	0.000	0.000	0.000	0.000	0.000	0.000	0.784
SSW	0.003	0.276	0.736	0.046	0.092	0.000	0.000	0.000	0.000	1.153
SW	0.002	0.092	0.552	0.000	0.000	0.000	0.000	0.000	0.000	0.646
WSW	0.000	0.046	0.000	0.046	0.000	0.046	0.000	0.000	0.000	0.138
W	0.000	0.046	0.046	0.092	0.000	0.000	0.000	0.000	0.000	0.184
WNW	0.000	0.046	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.092
NW	0.001	0.092	0.184	0.046	0.000	0.000	0.000	0.000	0.000	0.323
NNW	0.002	0.184	0.322	0.000	0.046	0.000	0.000	0.000	0.000	0.553
SUBTOTAL	0.046	4.046	10.805	0.782	0.138	0.046	0.000	0.000	0.000	15.862

TOTAL HOURS OF VALID STABILITY OBSERVATIONS 2189
TOTAL HOURS OF STABILITY CLASS F 355
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS F 345
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS 2175
TOTAL HOURS CALM 1

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT
STABILITY BASED ON DELTA-T BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT 9.73 METER LEVEL

DATE PRINTED: 2020/01/23

MEAN WIND SPEED = 2.01

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBERS

JOINT PERCENTAGE FREQUENCIES OF WIND SPEED BY WIND DIRECTION FOR

STABILITY CLASS G (DELTA T > 4.0 C/100 M)

SEQUOYAH NUCLEAR PLANT

OCT 1, 2019 - DEC 31, 2019

WIND DIRECTION	WIND SPEED(MPH) CALM	0.60-1.40	1.41-3.40	3.41-5.40	5.41-7.40	7.41-12.40	12.41-18.40	18.41-24.40	>=24.41	TOTAL
N	0.000	0.046	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.092
NNE	0.000	0.230	0.460	0.138	0.000	0.000	0.000	0.000	0.000	0.828
NE	0.000	0.092	0.414	0.046	0.000	0.000	0.000	0.000	0.000	0.552
ENE	0.000	0.276	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.322
E	0.000	0.138	0.092	0.000	0.000	0.000	0.000	0.000	0.000	0.230
ESE	0.000	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.046
SE	0.000	0.046	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.092
SSE	0.000	0.138	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.138
S	0.000	0.092	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.138
SSW	0.000	0.138	0.230	0.000	0.000	0.000	0.000	0.000	0.000	0.368
SW	0.000	0.046	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.092
WSW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
W	0.000	0.046	0.046	0.000	0.000	0.000	0.000	0.000	0.000	0.092
WNW	0.000	0.000	0.092	0.000	0.000	0.000	0.000	0.000	0.000	0.092
NW	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
NNW	0.000	0.092	0.092	0.000	0.000	0.000	0.000	0.000	0.000	0.184
SUBTOTAL	0.000	1.425	1.655	0.184	0.000	0.000	0.000	0.000	0.000	3.264

TOTAL HOURS OF VALID STABILITY OBSERVATIONS	2189
TOTAL HOURS OF STABILITY CLASS G	72
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY CLASS G	71
TOTAL HOURS OF VALID WIND DIRECTION-WIND SPEED-STABILITY OBSERVATIONS	2175
TOTAL HOURS CALM	0

METEOROLOGICAL FACILITY: SEQUOYAH NUCLEAR PLANT
STABILITY BASED ON DELTA-T BETWEEN 9.25 AND 45.99 METERS
WIND SPEED AND DIRECTION MEASURED AT 9.73 METER LEVEL

DATE PRINTED: 2020/01/23

MEAN WIND SPEED = 1.80

NOTE: TOTALS AND SUBTOTALS ARE OBTAINED FROM UNROUNDED NUMBER

Attachment 2

Deviations from ODCM Controls/Surveillance Requirements

No Deviations in Calandar Year 2019

Attachment 3

Radiation Monitors Non Functional for Greater than 30 days

Date	Description of Non Functionality
June 20, 2016	Unit 2 Shield Building Exhaust Radiation Monitor: 2-RM-90-400 has been non-functional for greater than 30 days due to DCN D23440. The monitor was declared non-functional 6/20/16 at 09:20 and is currently still non functional due to complications with DCN D23440. Compensatory sampling has been in place and will continue until monitor is returned to functional status.
June 25, 2016	Unit 1 Shield Building Exhaust Radiation Monitor:1-RM-90-400 has been non-functional for greater than 30 days due to DCN D23440. The monitor was declared non-functional 6/25/16 at 14:17 and is currently still non functional due to complications with DCN D23440. Compensatory sampling has been in place and will continue until monitor is returned to functional status.

Attachment 4

Errata/Corrections to Previous ARERRs

The subsequent addendums document changes to previous ARERRs from the years 2018, 2017 and 2016. The changes are a result of a procedure error that allowed for incorrect flow values to be used for the monthly shield building exhaust permits. In the third quarter of 2016, flow elements were replaced in the U1 and U2 SBVMS (Shield Building Vent Monitoring System) as part of a design change to address system aging issues. During post installation testing on U1, it was discovered that the new flow sensors could not meet system accuracy requirements during periods of low flow and the SBVMS was never returned to service. Based on the U1 test results, the U2 SBVMS was also declared non-functional.

During normal operation, the SBVMS provides U1 and U2 Shield Building ventilation flow rates to the plant computer system. Chemistry personnel use this data point to calculate the quantity of radioactive effluents released from the plant for determining doses to the public. Although the SBVMS was out of service, the flow sensors were still providing erroneous data to ICS and the computer data point was still available. The procedure available provided an opportunity to calculate the flows using the erroneous data and that method continued to be used until June 10, 2019, when, following a software upgrade to ICS, personnel noticed significant errors in the data provided and the licensee realized that information from a non-functional system was being used.

The affected release permits were reprocessed with the appropriate compensatory flows, doses recalculated, and appropriate changes made to the affected ARERRs. The recalculated differences were for tritium only. Released values for 2018, 2017 and 2016 differed by 1%, 2% and 1.5% respectively. Total Body and Thyroid Dose reported for 2018 and 2017 remained unchanged from previous values. Thyroid Dose for 2016 decreased from 7.15E-01 mrem to 7.13E-01 mrem for the calendar year.

The following addendums address the use of erroneous data and correct tables that required corrections. The pages of the reports requiring updates are included in their entirety.

Associated Condition Reports: 1561202, 1524521, and 1546981.

Addendum 1

Errata/Corrections to Previous ARERRs: 2018 ARERR

Gaseous Effluents - Summation of Releases
During the Period
Starting: 1-Jan-2018 Ending: 30-Jun-2018

Type of Effluent	Units	Quarter 1	Quarter 2	Estimated Total Error %
A. Fission and Activation Products				
1. Total Release	Ci	2.82E-01	9.21E-01	11%
2. Average Release Rate For Period	µCi/sec	3.63E-02	1.17E-01	
3. Percent of Applicable Limit	%	*	*	
B. Radioiodines				
1. Total Iodine-131	Ci	0.00E+01**	0.00E+01	N/A***
2. Average Release Rate For Period	µCi/sec	0.00E+01	0.00E+01	
3. Percent of Applicable Limit	%	*	*	
C. Particulates				
1. Particulates (Half-Lives > 8 Days)	Ci	0.00E+01	0.00E+01	N/A
2. Average Release Rate For Period	µCi/sec	0.00E+01	0.00E+01	
3. Percent of Applicable Limit	%	*	*	
4. Gross Alpha Radioactivity	Ci	0.00E+01	0.00E+01	
D. Tritium				
1. Total Release	Ci	1.80E+00	3.17E+00	15%
2. Average Release Rate For Period	µCi/sec	2.32E-01	4.04E-01	
3. Percent of Applicable Limit	%	*	*	
E. Carbon-14				
1. Total Release	Ci	5.61E+00	5.40E+00	N/A
2. Average Release Rate For Period	µCi/sec	7.22E-01	6.87E-01	
3. Percent of Applicable Limit	%	*	*	

* Applicable Limits are expressed in terms of dose. See Tables 1-4 of the 2018 Radiological Impact Assessment Report.

** Zeroes indicate that no radioactivity was present at detectable levels.

*** N/A - Errors in measurement are not reported for these values since none were identified during the reporting period.

Gaseous Effluents - Summation of Releases
During the Period
Starting: 1-Jul-2018 Ending: 31-Dec-2018

Type of Effluent	Units	Quarter 3	Quarter 4	Estimated Total Error %
A. Fission and Activation Products				
1. Total Release	Ci	1.05E+00	2.12E+00	11%
2. Average Release Rate For Period	µCi/sec	1.32E-01	2.67E-01	
3. Percent of Applicable Limit	%	*	*	
B. Radioiodines				
1. Total Iodine-131	Ci	0.00E+01**	0.00E+01	N/A***
2. Average Release Rate For Period	µCi/sec	0.00E+01	0.00E+01	
3. Percent of Applicable Limit	%	*	*	
C. Particulates				
1. Particulates (Half-Lives > 8 Days)	Ci	0.00E+01	0.00E+01	16%
2. Average Release Rate For Period	µCi/sec	0.00E+01	0.00E+01	
3. Percent of Applicable Limit	%	*	*	
4. Gross Alpha Radioactiviy	Ci	0.00E+01	0.00E+01	
D. Tritium				
1. Total Release	Ci	4.43E+00	4.81E+00	15%
2. Average Release Rate For Period	µCi/sec	5.57E-01	6.05E-01	
3. Percent of Applicable Limit	%	*	*	
E. Carbon-14				
1. Total Release	Ci	5.83E+00	4.33E+00	N/A
2. Average Release Rate For Period	µCi/sec	7.33E-01	5.44E-01	
3. Percent of Applicable Limit	%	*	*	

* Applicable Limits are expressed in terms of dose. See Tables 1-4 of the 2018 Radiological Impact Assessment Report.

** Zeroes indicate that no radioactivity was present at detectable levels.

*** N/A - Errors in measurement are not reported for these values since none were identified during the reporting period.

Curies Released Gaseous Ground Level Releases
During the Period
Starting: 1-Jan-2018 Ending: 31-Mar-2018

	CONTINUOUS	BATCH	TOTAL
FISSION GASES			
Argon-41	0.00E+01*	2.03E-01	2.03E-01
Xenon-133	0.00E+01	7.92E-02	7.92E-02
Xenon-135	0.00E+01	1.51E-04	1.51E-04
TOTALS	0.00E+01	2.82E-01	2.82E-01
IODINES			
TOTALS	0.00E+01	0.00E+01	0.00E+01
PARTICULATES			
TOTALS	0.00E+01	0.00E+01	0.00E+01
TRITIUM			
Tritium	1.55E+00	2.58E-01	1.80E+00
CARBON-14			
Carbon-14 (CO_2 form)	1.12E+00	0.00E+01	1.12E+00
Carbon-14 (Total)	5.61E+00	0.00E+01	5.61E+00

*Zeros indicate that no radioactivity was present at detectable levels.

Curies Released Gaseous Ground Level Releases
During the Period
Starting: 1-July-2018 Ending: 30-Sep-2018

	CONTINUOUS	BATCH	TOTAL
FISSION GASES			
Argon-41	0.00E+01*	6.91E-01	6.91E-01
Xenon-133	0.00E+01	3.36E-01	3.36E-01
Xenon-135	0.00E+01	1.83E-02	1.83E-02
TOTALS	0.00E+01	1.05E+00	1.05E+00
IODINES			
TOTALS	0.00E+01	0.00E+01	0.00E+01
PARTICULATES			
TOTALS	0.00E+01	0.00E+01	0.00E+01
TRITIUM			
Tritium	3.98E+00	4.50E-01	.43E+00
CARBON-14			
Carbon-14 (CO_2 form)	1.17E+00	0.00E+01	1.17E+00
Carbon-14 (Total)	5.83E+00	0.00E+01	5.83E+00

*Zeros indicate that no radioactivity was present at detectable levels.

Curies Released Gaseous Ground Level Releases
During the Period
Starting: 1-Oct-2018 Ending: 31-Dec-2018

	CONTINUOUS	BATCH	TOTAL
FISSION GASES			
Argon-41	0.00E+01*	1.28E+00	1.28E+00
Xenon-133	0.00E+01	7.99E-01	7.99E-01
Xenon-135	0.00E+01	4.32E-02	4.32E-02
TOTALS	0.00E+01	2.12E+00	2.12E+00
IODINES			
TOTALS	0.00E+01	0.00E+01	0.00E+01
PARTICULATES			
TOTALS	0.00E+01	0.00E+01	0.00E+01
TRITIUM			
Tritium	.91E-01	4.12E+00	4.81E+00
CARBON-14			
Carbon-14 (CO_2 form)	8.65E-01	0.00E+01	8.65E-01
Carbon-14 (Total)	4.33E+00	0.00E+01	4.33E+00

*Zeros indicate that no radioactivity was present at detectable levels.

Table 1
Doses from Airborne Effluents

First Quarter

Individual Doses

Pathway	Dose	Quarterly Limit	Percent of Limit	Location Sector/Distance/Unit	X/Q (sec/m^3)	D/Q ($1/m^2$)
External						
Gamma Air	1.89E-04	5 mrad	<1	N/950/meters	3.43E-06	9.97E-09
Beta Air	7.47E-05	10 mrad	<1	N/950/meters	3.43E-06	9.97E-09
Submersion						
Total Body	1.25E-04	10 mrad	<1	SSW/2129/meters	2.64E-06	7.67E-09
Skin	1.86E-04	10 mrad	<1	SSW/2129/meters	2.64E-06	7.67E-09
Organ Doses[1]						
(Max) Child/Bone	2.85E-01	7.5 mrem	3.8	NNE/3770/meters	1.24E-06	2.83E-09
Child/Thyroid	5.75E-02	7.5 mrem	<1	NNE/3770/meters	1.24E-06	2.83E-09
Child/Total Body	5.75E-02	7.5 mrem	<1	NNE/3770/meters	1.24E-06	2.83E-09

Population Doses

Total Body Dose 3.69E-01 man-rem
Maximum Organ Dose (organ) 1.82E+00 man-rem (Bone)

Second Quarter

Individual Doses

Pathway	Dose	Quarterly Limit	Percent of Limit	Location Sector/Distance/Unit	X/Q (sec/m^3)	D/Q ($1/m^2$)
External						
Gamma Air	1.71E-03	5 mrad	<1	N/950/meters	7.63E-06	1.36E-08
Beta Air	6.13E-04	10 mrad	<1	N/950/meters	7.63E-06	1.36E-08
Submersion						
Total Body	8.54E-04	10 mrad	<1	N/1389/meters	4.29E-06	7.32E-09
Skin	1.26E-03	10 mrad	<1	N/1389/meters	4.29E-06	7.32E-09
Organ Doses[1]						
(Max) Child/Bone	4.25E-01	7.5 mrem	5.7	NW/1316/meters	1.57-06	1.91E-09
Child/Thyroid	8.62E-02	7.5 mrem	1.2	NW/1316/meters	1.57-06	1.91E-09
Child/Total Body	8.62E-02	7.5 mrem	1.2	NW/1316/meters	1.57-06	1.91E-09

Population Doses

Total Body Dose 4.44E-01 man-rem
Maximum Organ Dose (organ) 2.16E+00 man-rem (Bone)

Population doses can be compared to the natural background dose for the entire 50-mile population of about 95,400 man-rem/year (based on 90 mrem/year for natural background).

[1]Organ Doses include contributions from Carbon-14 in the form of Carbon Dioxide

Tables 3 and 4

Doses from Airborne Effluents

Third Quarter

Individual Doses

Pathway	Dose	Quarterly Limit	Percent of Limit	Location Sector/Distance/Unit	X/Q (sec/m^3)	D/Q ($1/m^2$)
External						
Gamma Air	1.22E-03	5 mrad	<1	N/950/meters	6.61E-06	1.58E-08
Beta Air	5.03E-04	10 mrad	<1	N/950/meters	6.61E-06	1.58E-08
Submersion						
Total Body	6.63E-04	10 mrad	<1	S/1764/meters	4.27E-06	6.62E-09
Skin	9.91E-04	10 mrad	<1	S/1764/meters	4.27E-06	6.62E-09
Organ Doses[1]						
(Max) Child/Bone	4.12E-01	7.5 mrem	5.5	SSW/4532/meters	1.43E-06	2.36E-09
Child/Thyroid	8.37E-02	7.5 mrem	1.1	SSW/4532/meters	1.43E-06	2.36E-09
Child/Total Body	8.37E-02	7.5 mrem	1.1	SSW/4532/meters	1.43E-06	2.36E-09

Population Doses

Total Body Dose 5.29E-01 man-rem
Maximum Organ Dose (organ) 2.56E+00 man-rem (Bone)

Fourth Quarter

Individual Doses

Pathway	Dose	Quarterly Limit	Percent of Limit	Location Sector/Distance/Unit	X/Q (sec/m^3)	D/Q ($1/m^2$)
External						
Gamma Air	1.59E-03	5 mrad	<1	N/950/meters	4.75E-06	9.23E-09
Beta Air	6.86E-04	10 mrad	<1	SSW/1840/meters	5.06E-06	1.12E-08
Submersion						
Total Body	1.19E-03	10 mrad	<1	S/1764/meters	4.04-06	7.33E-09
Skin	1.79E-03	10 mrad	<1	S/1764/meters	4.04-06	7.33E-09
Organ Doses[1]						
(Max) Child/Bone	3.25E-01	7.5 mrem	4.3	WSW/1152/meters	1.81E-06	2.07-09
Child/Thyroid	6.69E-02	7.5 mrem	<1	WSW/1152/meters	1.81E-06	2.07-09
Child/Total Body	6.69E-02	7.5 mrem	<1	WSW/1152/meters	1.81E-06	2.07-09

Population Doses

Total Body Dose 4.46E-01 man-rem
Maximum Organ Dose (organ) 2.13E+00 man-rem (Bone)

Population doses can be compared to the natural background dose for the entire 50-mile population of about 95,400 man-rem/year (based on 90 mrem/year for natural background).

[1]Organ Doses include contributions from Carbon-14 in the form of Carbon Dioxide.

Addendum 2

Errata/Corrections to Previous ARERRs: 2017 ARERR

Gaseous Effluents - Summation of Releases
During the Period
Starting: 1-Jan-2017 Ending: 30-Jun-2017

Type of Effluent	Units	Quarter 1	Quarter 2	Estimated Total Error %
A. Fission and Activation Products				
1. Total Release	Ci	4.49E-01	3.87E+01	11%
2. Average Release Rate For Period	µCi/sec	5.77E-02	4.92E+00	
3. Percent of Applicable Limit	%	*	*	
B. Radioiodines				
1. Total Iodine-131	Ci	0.00E+01**	0.00E+01	N/A***
2. Average Release Rate For Period	µCi/sec	0.00E+01	0.00E+01	
3. Percent of Applicable Limit	%	*	*	
C. Particulates				
1. Particulates (Half-Lives > 8 Days)	Ci	0.00E+01	0.00E+01	N/A
2. Average Release Rate For Period	µCi/sec	0.00E+01	0.00E+01	
3. Percent of Applicable Limit	%	*	*	
4. Gross Alpha Radioactiviy	Ci	0.00E+01	0.00E+01	
D. Tritium				
1. Total Release	Ci	9.25E-01	9.41E+00	15%
2. Average Release Rate For Period	µCi/sec	1.19E-01	1.20E+00	
3. Percent of Applicable Limit	%	*	*	
E. Carbon-14				
1. Total Release	Ci	5.24E+00	4.40E+00	N/A
2. Average Release Rate For Period	µCi/sec	6.74E-01	5.60E-01	
3. Percent of Applicable Limit	%	*	*	

* Applicable Limits are expressed in terms of dose. See Tables 1-4 of the 2017 Radiological Impact Assessment Report.

** Zeroes indicate that no radioactivity was present at detectable levels.

*** N/A - Errors in measurement are not reported for these values since none were identified during the reporting period.

Gaseous Effluents - Summation of Releases
During the Period
Starting: 1-Jul-2017 Ending: 31-Dec-2017

Type of Effluent	Units	Quarter 3	Quarter 4	Estimated Total Error %
A. Fission and Activation Products				
1. Total Release	Ci	8.49E-01	8.63E-01	11%
2. Average Release Rate For Period	µCi/sec	1.07E-01	1.09E-01	
3. Percent of Applicable Limit	%	*	*	
B. Radioiodines				
1. Total Iodine-131	Ci	0.00E+01**	0.00E+01	N/A***
2. Average Release Rate For Period	µCi/sec	0.00E+01	0.00E+01	
3. Percent of Applicable Limit	%	*	*	
C. Particulates				
1. Particulates (Half-Lives > 8 Days)	Ci	0.00E+01	0.00E+01	16%
2. Average Release Rate For Period	µCi/sec	0.00E+01	0.00E+01	
3. Percent of Applicable Limit	%	*	*	
4. Gross Alpha Radioactiviy	Ci	0.00E+01	0.00E+01	
D. Tritium				
1. Total Release	Ci	9.15E-01	2.50E+00	15%
2. Average Release Rate For Period	µCi/sec	1.15E-01	3.15E-01	
3. Percent of Applicable Limit	%	*	*	
E. Carbon-14				
1. Total Release	Ci	5.76E+00	5.49E+00	N/A
2. Average Release Rate For Period	µCi/sec	7.25E-01	6.98E-01	
3. Percent of Applicable Limit	%	*	*	

* Applicable Limits are expressed in terms of dose. See Tables 1-4 of the 2017 Radiological Impact Assessment Report.

** Zeroes indicate that no radioactivity was present at detectable levels.

*** N/A - Errors in measurement are not reported for these values since none were identified during the reporting period.

Curies Released Gaseous Ground Level Releases
During the Period
Starting: 1-Jan-2017 Ending: 31-Mar-2017

	CONTINUOUS	BATCH	TOTAL
FISSION GASES			
Argon-41	0.00E+01*	3.38E-01	3.38E-01
Xenon-133	0.00E+01	1.03E-01	1.03E-01
Xenon-135	0.00E+01	7.32E-03	7.32E-03
TOTALS	0.00E+01	4.49E-01	4.49E-01
IODINES			
Iodine-131	0.00E+01	0.00E+01	0.00E+01
TOTALS	0.00E+01	0.00E+01	0.00E+01
PARTICULATES			
TOTALS	0.00E+01	0.00E+01	0.00E+01
TRITIUM			
Tritium	7.67E-01	1.58E-01	9.25E-01
CARBON-14			
Carbon-14 (CO_2 form)	1.05E+00	0.00E+01	1.05E+00
Carbon-14 (Total)	5.24E+00	0.00E+01	5.24E+00

*Zeros indicate that no radioactivity was present at detectable levels.

Curies Released Gaseous Ground Level Releases
During the Period
Starting: 1-Apr-2017 Ending: 30-Jun-2017

	CONTINUOUS	BATCH	TOTAL
FISSION GASES			
Argon-41	0.00E+01*	1.95E+00	1.95E+00
Xenon-133	0.00E+01	3.67E+01	3.67E+01
Xenon-135	0.00E+01	1.58E-02	1.58E-02
TOTALS	0.00E+01	3.87E+01	3.87E+01
IODINES			
Iodine-131	0.00E+01	0.00E+01	0.00E+01
TOTALS	0.00E+01	0.00E+01	0.00E+01
PARTICULATES			
TOTALS	0.00E+01	0.00E+01	0.00E+01
TRITIUM			
Tritium	1.68E+00	7.73E+00	9.41E+00
CARBON-14			
Carbon-14 (CO_2 form)	8.80E-01	0.00E+01	8.80E-01
Carbon-14 (Total)	4.40E+00	0.00E+01	4.40E+00

*Zeros indicate that no radioactivity was present at detectable levels.

Curies Released Gaseous Ground Level Releases
During the Period
Starting: 1-July-2017 Ending: 30-Sep-2017

	CONTINUOUS	BATCH	TOTAL
FISSION GASES			
Argon-41	0.00E+01*	7.94E-01	7.94E-01
Xenon-133	0.00E+01	5.29E-02	5.29E-02
Xenon-135	0.00E+01	1.51E-03	1.51E-03
TOTALS	0.00E+01	8.49E-01	8.49E-01
IODINES			
TOTALS	0.00E+01	0.00E+01	0.00E+01
PARTICULATES			
TOTALS	0.00E+01	0.00E+01	0.00E+01
TRITIUM			
Tritium	7.25E-01	1.90E-01	9.15E-01
CARBON-14			
Carbon-14 (CO_2 form)	1.15E+00	0.00E+01	1.15E+00
Carbon-14 (Total)	5.76E+00	0.00E+01	5.76E+00

*Zeros indicate that no radioactivity was present at detectable levels.

Curies Released Gaseous Ground Level Releases
During the Period
Starting: 1-Oct-2017 Ending: 31-Dec-2017

	CONTINUOUS	BATCH	TOTAL
FISSION GASES			
Argon-41	0.00E+01*	7.34E-01	7.34E-01
Xenon-133	0.00E+01	9.81E-02	9.81E-02
Xenon-135	0.00E+01	3.10E-02	3.10E-02
TOTALS	0.00E+01	8.63E-01	8.63E-01
IODINES			
TOTALS	0.00E+01	0.00E+01	0.00E+01
PARTICULATES			
TOTALS	0.00E+01	0.00E+01	0.00E+01
TRITIUM			
Tritium	1.58E+00	9.21E-01	2.50E+00
CARBON-14			
Carbon-14 (CO_2 form)	1.10E+00	0.00E+01	1.10E+00
Carbon-14 (Total)	5.49E+00	0.00E+01	5.49E+00

*Zeros indicate that no radioactivity was present at detectable levels.

Tables 1 and 2
Doses from Airborne Effluents

First Quarter

Individual Doses

Pathway	Dose	Quarterly Limit	Percent of Limit	Location Sector/Distance/Unit	X/Q (sec/m^3)	D/Q ($1/m^2$)
External						
Gamma Air	5.47E-04	5 mrad	<1	NNE/1300/meters	6.11E-06	1.86E-08
Beta Air	2.14E-04	10 mrad	<1	NNE/1300/meters	6.11E-06	1.86E-08
Submersion						
Total Body	1.66E-04	10 mrad	<1	NNE/2590/meters	2.21E-06	5.90E-09
Skin	2.47E-04	10 mrad	<1	NNE/2590/meters	2.21E-06	5.90E-09
Organ Doses[1]						
(Max) Infant/Bone	5.62E-01	7.5 mrem	7.5	N/1000/meters	3.89E-06	1.12E-08
Infant/Thyroid	1.21E-01	7.5 mrem	1.6	N/1000/meters	3.89E-06	1.12E-08
Infant/Total Body	1.21E-01	7.5 mrem	1.6	N/1000/meters	3.89E-06	1.12E-08

Population Doses

Total Body Dose 4.18E-01 man-rem
Maximum Organ Dose (organ) 2.08E+00 man-rem (Bone)

Second Quarter

Individual Doses

Pathway	Dose	Quarterly Limit	Percent of Limit	Location Sector/Distance/Unit	X/Q (sec/m^3)	D/Q ($1/m^2$)
External						
Gamma Air	6.10E-03	5 mrad	<1	NNE/1300/meters	6.67E-06	2.00E-08
Beta Air	9.33E-03	10 mrad	<1	NNE/1300/meters	6.67E-06	2.00E-08
Submersion						
Total Body	2.08E-03	10 mrad	<1	N/1981/meters	2.67E-06	6.80E-09
Skin	3.88E-03	10 mrad	<1	N/1981/meters	2.67E-06	6.80E-09
Organ Doses[1]						
(Max) Infant/Bone	9.26E-01	7.5 mrem	12.3	N/1000/meters	7.50E-06	2.08E-08
Infant/Thyroid	2.14E-01	7.5 mrem	2.9	N/1000/meters	7.50E-06	2.08E-08
Infant/Total Body	2.14E-01	7.5 mrem	2.9	N/1000/meters	7.50E-06	2.08E-08

Population Doses

Total Body Dose 3.72E-01 man-rem
Maximum Organ Dose (organ) 1.68E+00 man-rem (Bone)

Population doses can be compared to the natural background dose for the entire 50-mile population of about 95,400 man-rem/year (based on 90 mrem/year for natural background).

[1]Organ Doses include contributions from Carbon-14 in the form of Carbon Dioxide.

Addendum 3

Errata/Corrections to Previous ARERRs: 2016 ARERR

Gaseous Effluents - Summation of Releases
During the Period
Starting: 1-Jul-2016 Ending: 31-Dec-2016

Type of Effluent	Units	Quarter 3	Quarter 4	Estimated Total Error %
A. Fission and Activation Products				
1. Total Release	Ci	6.25E-01	1.23E+02	11%
2. Average Release Rate For Period	µCi/sec	7.87E-02	1.55E+01	
3. Percent of Applicable Limit	%	*	*	
B. Radioiodines				
1. Total Iodine-131	Ci	0.00E+01**	0.00E+01	N/A***
2. Average Release Rate For Period	µCi/sec	0.00E+01	0.00E+01	
3. Percent of Applicable Limit	%	*	*	
C. Particulates				
1. Particulates (Half-Lives > 8 Days)	Ci	0.00E+01	0.00E+01	16%
2. Average Release Rate For Period	µCi/sec	0.00E+01	0.00E+01	
3. Percent of Applicable Limit	%	*	*	
4. Gross Alpha Radioactiviy	Ci	0.00E+01	0.00E+01	
D. Tritium				
1. Total Release	Ci	7.87E-01	3.28E+00	15%
2. Average Release Rate For Period	µCi/sec	9.94E-02	4.12E-01	
3. Percent of Applicable Limit	%	*	*	
E. Carbon-14				
1. Total Release	Ci	5.71E+00	4.56E+00	N/A
2. Average Release Rate For Period	µCi/sec	7.34E-01	5.86E-01	
3. Percent of Applicable Limit	%	*	*	

* Applicable Limits are expressed in terms of dose. See Tables 1-4 of the 2016 Radiological Impact Assessment Report.

** Zeroes indicate that no radioactivity was present at detectable levels.

*** N/A - Errors in measurement are not reported for these values since none were identified during the reporting period.

Curies Released Gaseous Ground Level Releases
During the Period
Starting: 1-July-2016 Ending: 30-Sep-2016

	CONTINUOUS	BATCH	TOTAL
FISSION GASES			
Xenon-133M	0.00E+01*	6.72E-04	6.72E-04
Xenon-135	0.00E+01	1.04E-02	1.04E-02
Argon-41	0.00E+01	2.35E-01	2.35E-01
Xenon-133	0.00E+01	3.79E-01	3.79E-01
TOTALS	0.00E+01	6.25E-01	6.25E-01
IODINES			
TOTALS	0.00E+01	0.00E+01	0.00E+01
PARTICULATES			
TOTALS	0.00E+01	0.00E+01	0.00E+01
TRITIUM			
Tritium	6.62E-01	1.25E-01	7.87E-01
CARBON-14			
Carbon-14 (CO_2 form)	1.14E+00	0.00E+01	1.14E+00
Carbon-14 (Total)	5.71E+00	0.00E+01	5.71E+00

*Zeros indicate that no radioactivity was present at detectable levels.

Curies Released Gaseous Ground Level Releases
During the Period
Starting: 1-Oct-2016 Ending: 31-Dec-2016

	CONTINUOUS	BATCH	TOTAL
FISSION GASES			
Xenon-135	0.00E+01*	2.27E-02	2.27E-02
Argon-41	0.00E+01	9.62E-01	9.62E-01
Xenon-133	0.00E+01	1.22E+02	1.22E+02
TOTALS	0.00E+01	1.23E+02	1.23E+02
IODINES			
TOTALS	0.00E+01	0.00E+01	0.00E+01
PARTICULATES			
TOTALS	0.00E+01	0.00E+01	0.00E+01
TRITIUM			
Tritium	1.61E+00	1.67E+00	3.28E+00
CARBON-14			
Carbon-14 (CO_2 form)	9.12E-01	0.00E+01	9.12E-01
Carbon-14 (Total)	4.56E+00	0.00E+01	4.56E+00

*Zeros indicate that no radioactivity was present at detectable levels.

Tables 3 and 4
Doses from Airborne Effluents

Third Quarter

Individual Doses

Pathway	Dose	Quarterly Limit	Percent of Limit	Location Sector/Distance/Unit	X/Q (sec/m^3)	D/Q ($1/m^2$)
External						
Gamma Air	2.53E-04	5 mrad	<1	NNE/1300/meters	3.88E-06	1.62E-08
Beta Air	1.35E-04	10 mrad	<1	NNE/1300/meters	3.88E-06	1.62E-08
Submersion						
Total Body	2.34E-04	10 mrad	<1	S/1764/meters	4.13E-06	6.99E-09
Skin	3.59E-04	10 mrad	<1	S/1764/meters	4.13E-06	6.99E-09
Organ Doses[1]						
(Max) Child/Bone	9.29E-01	7.5 mrem	12.4	S/2000/meters	3.44E-06	5.66E-09
Child/Thyroid	1.86E-01	7.5 mrem	2.5	S/2000/meters	3.44E-06	5.66E-09
Child/Total Body	1.86E-01	7.5 mrem	2.5	S/2000/meters	3.44E-06	5.66E-09

Population Doses

Total Body Dose 4.51E-01 man-rem
Maximum Organ Dose (organ) 2.24E+00 man-rem (Bone)

Fourth Quarter

Individual Doses

Pathway	Dose	Quarterly Limit	Percent of Limit	Location Sector/Distance/Unit	X/Q (sec/m^3)	D/Q ($1/m^2$)
External						
Gamma Air	8.20E-03	5 mrad	<1	NNE/1300/meters	5.11E-06	1.37E-08
Beta Air	2.12E-02	10 mrad	<1	NNE/1300/meters	5.11E-06	1.37E-08
Submersion						
Total Body	7.23E-03	10 mrad	<1	SSW/2129/meters	5.40E-06	1.05E-08
Skin	1.62E-02	10 mrad	<1	SSW/2129/meters	5.40E-06	1.05E-08
Organ Doses[1]						
(Max) Child/Bone	1.00E+00	7.5 mrem	13.3	NNW/635/meters	6.69E-06	6.60E-09
Child/Thyroid	2.11E-01	7.5 mrem	2.8	NNW/635/meters	6.69E-06	6.60E-09
Child/Total Body	2.11E-01	7.5 mrem	2.8	NNW/635/meters	6.69E-06	6.60E-09

Population Doses

Total Body Dose 5.53E-01 man-rem
Maximum Organ Dose (organ) 2.56E+00 man-rem (Bone)

Population doses can be compared to the natural background dose for the entire 50-mile population of about 95,400 man-rem/year (based on 90 mrem/year for natural background).

[1]Organ Doses include contributions from Carbon-14 in the form of Carbon Dioxide.

Table 9

Total Dose from Fuel Cycle

Dose	First Quarter	Second Quarter	Third Quarter	Fourth Quarter	
Total Body or any Organ (except thyroid)					
Total body air submersion	3.18E-04	1.69E-04	2.34E-04	7.23E-03	
Critical organ dose (air)	4.94E-01	9.28E-01	9.29E-01	1.00E+00	
Total body dose (liquid)	7.20E-05	1.20E-03	1.10E-03	8.50E-03	
Maximum organ dose (liquid)	1.60E-04	1.40E-03	1.30E-03	9.00E-03	
Direct Radiation Dose	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
Total	4.95E-01	9.31E-01	9.32E-01	1.02E+00	
Cumulative Total Dose (Total body or any other organ) mrem					3.38E+00
Annual Dose Limit (mrem)					25
Percent of Limit					13.5
Thyroid Dose (mrem)					
Total body air submersion	3.18E-04	1.69E-04	2.34E-04	7.23E-03	
Thyroid dose (airborne)	1.01E-01	1.86E-01	1.86E-01	2.11E-01	
Total body dose (liquid)	7.20E-05	1.20E-03	1.10E-03	8.50E-03	
Thyroid dose (liquid)	6.80E-05	1.20E-03	1.10E-03	8.50E-03	
Direct Radiation Dose	0.00E+00	0.00E+00	0.00E+00	0.00E+00	
Total	1.01E-01	1.89E-01	1.88E-01	2.35E-01	
Cumulative Total Dose (Thyroid) mrem					7.13E-01
Annual Dose Limit (mrem)					75
Percent of Limit					0.95